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# The Mining Journal

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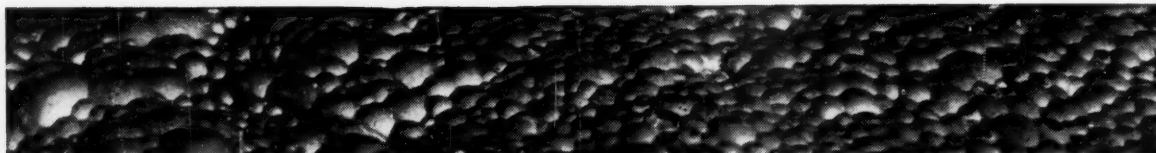
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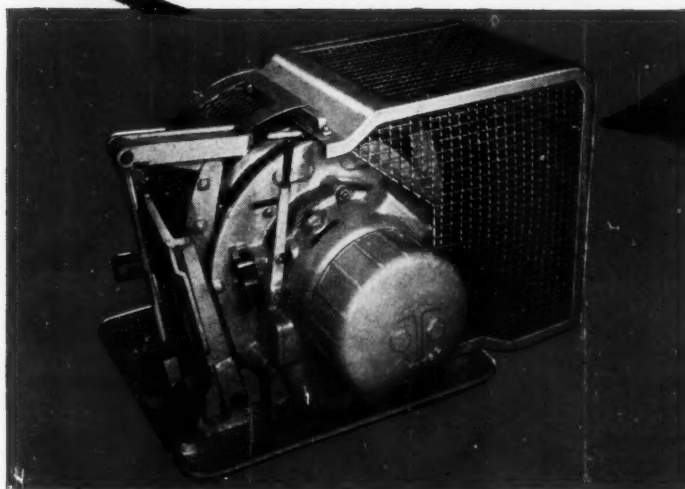


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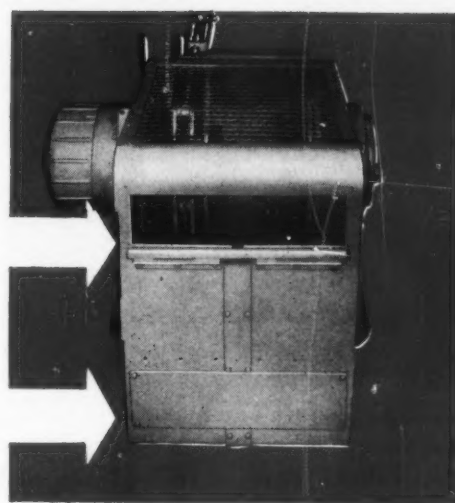
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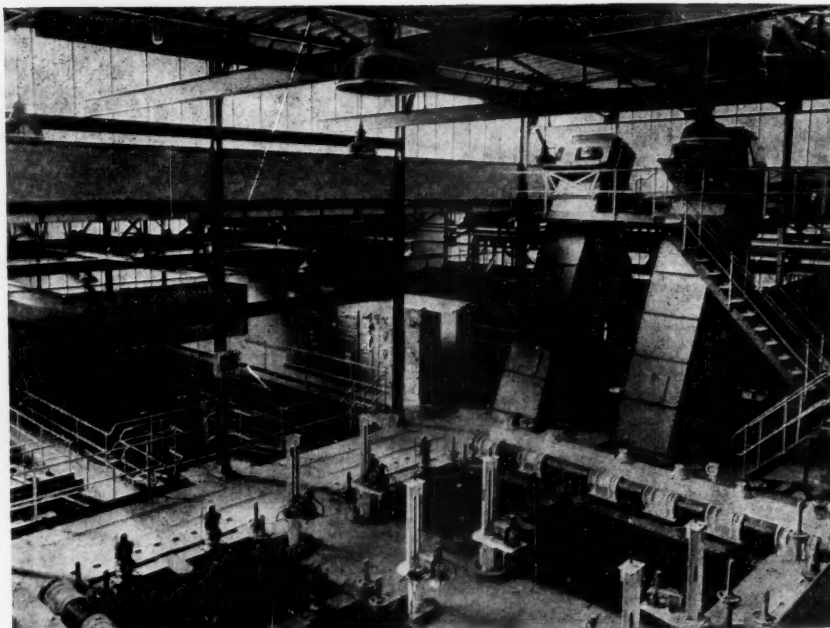


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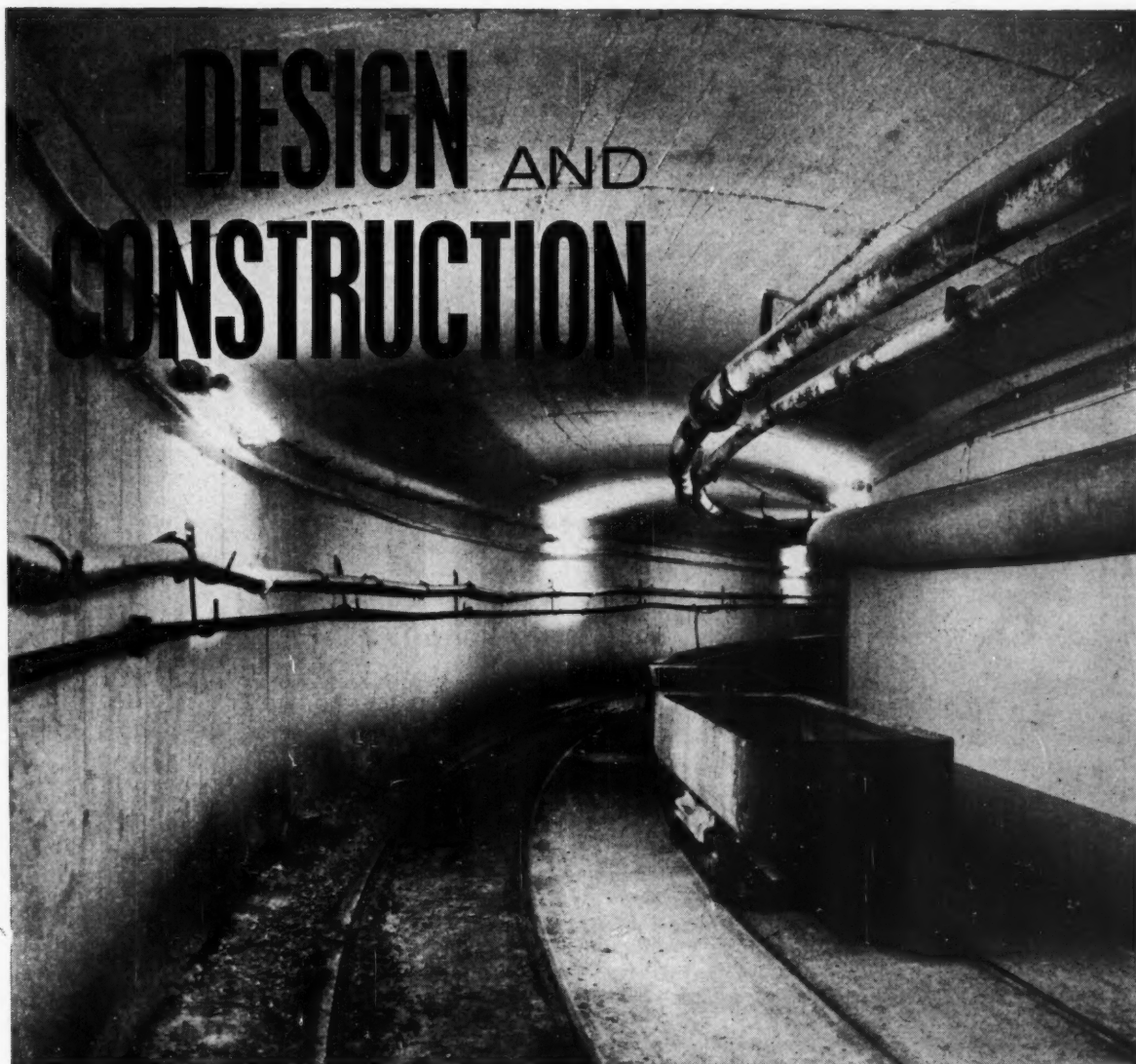
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# The Mining Journal

London, December 23, 1960

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## Mining's Mixed Fortunes in 1960

**"I WILL ROAR YOU,"** said Bottom, "as gently as any sucking dove." In some respects this familiar quotation from *A Midsummer Night's Dream* is perhaps a not inappropriate epitaph for the year now ending. Widely heralded on its approach—with perhaps more enthusiasm than chronological accuracy—as the start of a new decade, a year which was confidently expected to bring a new surge of expansion, closes with steel works in the United States operating at barely half capacity and economists differing as to whether the American economy is in the grip of a mild recession or merely moving sideways at a high level. The majority view now seems to be that no significant recovery can be expected before mid-1961.

In Britain, where the year opened with share prices soaring to new and perhaps not always realistic heights, we have seen the optimism of investors being slowly eroded by the credit squeeze. In Western Europe, too, the tempo of expansion has begun to slacken. The gulf between the "Six" and the "Seven" remains unbridged, although the possibility of finding an acceptable solution to this intractable problem may have begun to look rather less remote.

While the Free World economy has temporarily lost its momentum, the Communist powers continue to accelerate their programmes of industrial expansion and, though not without difficulties of their own, are making impressive progress in many directions. Nowhere have their achievements been more spectacular than in the discovery of new mineral resources, the construction of new mines, and the expansion of the metal industries.

Politically, 1960 has been anything but dovelike. Among the salient happenings of an eventful year were the collapse of the hopefully awaited Summit talks; the political emancipation of Nigeria and Belgium's withdrawal from the Congo, which led to UNO's intervention in the ensuing crisis; the Castro revolution in Cuba; and Senator Kennedy's victory in one of the most closely contested presidential elections in United States history.

In Moscow, world Communism met in prolonged and secret conclave towards the close of the year. It has yet to be seen whether a modified image of Communism and its attitude to the West will emerge from what may prove to have been an epoch-making occasion.

In the Union of South Africa, where the problem of racial relations was thrown into sharp focus by the tragic events of Sharpeville, the result of a national referendum gave the government a narrow majority in favour of the proposed Republic. In the Central African Federation the right of secession has become the most immediately critical of the constitutional issues currently under discussion at the London conference. Confidence that the political difficulties, however formidable, may yet be resolved is justified by the economic benefits of Federation, an outstanding event during the year being the official opening of the Kariba



hydroelectric project by the Queen Mother on May 17. In the field of racial relations an encouraging development in the Federation was the acceptance by the European Mineworkers of proposals to abolish the separate categories of jobs for Europeans and Africans on the Rhodesian Copperbelt.

Not the least significant of the year's political developments has been the emergence of the uncommitted nations as a third *bloc* in the United Nations, capable of exerting a moderating influence on the policies of both Russia and the Western powers. Collectively and individually, the goodwill of the underdeveloped countries has become a key factor in the ideological struggle between East and West. This situation underlines the strategic importance of financial and technical aid, which is still further accentuated by the freshening of Macmillan's "winds of change", now sweeping over some parts of Africa with gale force, and by the recent disturbances in some South American countries. The fact that the pause in the economic tempo has led to the terms of trade running against the primary producing countries has not prevented them from stepping up their planning targets, confident that if the money is not obtainable from Western sources it will be forthcoming from Russia. Economically, too, it is obviously in the interests of the industrial nations to play a more active part in providing capital for developing the primary producing countries and so building up markets for their own products.

In 1959 government grants and loans by the industrialized countries of the Free World to the less developed nations were estimated at \$4,000,000,000, of which the U.S. supplied about two-thirds and France and the United Kingdom most of the balance. Even the United States, with her unparalleled resources has not been able to support indefinitely such a huge foreign aid programme without endangering the stability of her currency. The drain on her gold reserves has recently been accelerated by the low interest rates maintained to prime the flagging domestic economy, resulting in an outflow of "hot money" in search of more profitable yields abroad. On November 3, 1960, the U.S. gold stock fell by \$175,000,000, the largest loss ever suffered in a single day. For the first time in 40 years, U.S. gold reserves are below the "traditional danger point" of \$18,000,000,000. In an attempt to ease the strain on the dollar, the Eisenhower administration has announced sweeping economies in its military expenditure abroad.

It's an ill trade wind indeed that blows nobody any good. Suspicion of the dollar has led to a world demand for bullion, culminating in a surge of buying orders which pushed up the London gold price to a peak of 290s. on October 19. This flurry was touched off by the fears that a new Kennedy administration would induce a new surge of inflation and hasten the devaluation of the dollar. The fever has temporarily abated, but Senator Kennedy's assurance that the value of the dollar will be maintained has by no means dispelled the widely held view that a rise in the gold price may not be indefinitely deferred. As long as this belief persists, the demand for gold shares can be expected to remain very firm. Meanwhile, the South African gold mining industry continues to set up new output records. Australian producers are having a hard struggle to maintain profitable operations in the face of rising costs, but output has been at a slightly higher level in Canada.

For uranium producers there has been no change for the better in the bleak medium-term outlook, covering the period between the expiry of existing contracts (at various dates between 1962 and 1967) and the early '70s, when demand is expected to catch up with supply. In Canada, producers have taken advantage of the "stretch

out" plan to strengthen their financial positions, but the suspension of production at some mines and a reduced scale of operations at others must obviously have a severe impact not only on the new uranium towns but on the Canadian economy as a whole.

In the diamond industry the demand for gems has been at an extremely high level, but the falling away in American stockpiling for strategic needs and competition from the manufacture of synthetics in the U.S.A. caused some reduction in the turnover of natural stones. In the third quarter, however, there was a marked rise in sales of industrials, triggered off by the situation in the Belgian Congo, where Forminière and Bécéka's operations were brought to a complete standstill as a result of the exceptionally fierce fighting in the Kasai. In view of the uncertain outlook for supplies of Congo board, De Beers has decided to proceed with the production of synthetic crushing board in a factory to be erected in the Union of South Africa, using a process developed by its own research organization.

For the base metal industries as a whole 1960 failed to fulfil its earlier promise, due largely to the disappointing performance of the American economy after the settlement of the prolonged steel and copper strikes, both of which were a hangover from 1959. The steel strike was settled in the first week of January on terms which seemed to constitute a signal victory for the union. It was expected that with the strike out of the way the U.S. steel industry could look forward to a long period of near-capacity operation and that the 1960 output could reach the all-time record of 130,000,000 tons. The expected upswing in the American economy failed to materialize, however, and throughout the greater part of the year steel production has been trending steadily downwards. In some recent weeks the industry has been operating at less than half capacity and it is now thought that the steel slump may continue until well into 1961.

Fortunately for producers of the ferroalloy metals and minerals, the disappointing performance of the U.S. steel industry has been offset by rising production in the United Kingdom, Western Europe and elsewhere. By all indications 1960 has, in fact, been another record year for world steel production as a whole. Iron ore exports, generally, have been at record levels; even in the United States imports in the first nine months were considerably higher than in the same period of 1959. Some Canadian mines have been hit by the slump, however, and in the U.S. the curtailment of iron ore operations was recently announced by a leading U.S. domestic producer.

For producers of chromite and manganese the horizon, so long overcast, shows signs of brightening, but no significant upturn in prices seems likely until the American steel industry has regained its forward momentum. Wolfram prices have remained relatively stable within limits which, if low in comparison with the prices ruling four years ago, have been sufficient to leave the more efficient producers with reasonable margins. Interest in tungsten for applications involving high temperatures continues to grow.

Nickel has had a good year, due in no small measure to the high level of demand for stainless steel, and world consumption is expected to be in the region of 250,000 tons, compared with 217,500 tons in 1959. For the time being, at any rate, the expected pattern of Free World supplies has been significantly modified by the Cuban revolution and the Castro Government's seizure of the Nicaro and Moa Bay undertakings. Fortunately Inco's Thompson plant, with an initial capacity of 37,500 s.tons, is scheduled to come into operation early next year, while the U.S. Government would presumably be prepared to



make further supplies of D.P.A. nickel available should there be any temporary squeeze. World cobalt stocks are high enough to cushion consumers against the loss of the projected Cuban output, even in what at the moment seems the improbable event of disruption of supplies from the Katanga mines.

To no section of the mining industry has 1960 brought greater prosperity than to the Far Eastern and Nigerian tin producers. After three years of restrictions exports were finally freed from control as from the quarter beginning October 1. Rising production and shipments, coupled with a higher level of prices, are being reflected in sharply higher profits and dividends. Outside the United States, consumption has risen at a rate which exceeded earlier estimates and, despite the ending of restrictions, a small deficit is foreseen for the year. The United Nations Tin Conference in mid-year has resulted in a new tin agreement which, however, has yet to be ratified by the governments of participating countries.

For Nigerian tin producers a source of further satisfaction has been the strong demand for columbite. The revival of the market in 1959 has been more than maintained and not only current production but also a large part of the remaining stocks have been contracted for sale at improving prices. The market in tantalite is also very firm and the upward trend in prices has been further stimulated by virtually the total elimination of the Congo supply.

The strikes in the U.S. copper industry, which broke out in August last year, came to a gradual end in the early months of 1960, as one deadlock after another was at last resolved. They resulted in an aggregate loss of some 346,000 tons of mine production and an even greater hold-up of refined output. Once the supply position had been restored, however, the high level of production led to a persistent rise in world stocks, despite increasing consumption outside the United States. That prices were not drastically depressed by the weight of these large and increasing stocks was due solely to the confused situation in the Belgian Congo and to wage disputes in Northern Rhodesia and Chile, as well as to a considerable amount of support buying in the early autumn. The Rhodesian dispute was peacefully settled and the situation in the Katanga, though far from resolved, has become less immediately alarming, while the strike in Chile, now ended, was confined to Anaconda's Chuquicamata mine.

Early in October, 10 per cent cuts in deliveries were announced by the Anglo American and Rhodesian Selection Trust groups, whose example was subsequently followed by the Belgian Congo. Noranda is cutting back output by over 10 per cent, while the loss of copper resulting from the Chuquicamata dispute is approximately equal to a 10 per cent cutback in the Chile output. In Chile also negotiations are proceeding for a new labour contract at El Teniente and the possibility of another strike cannot be ruled out.

The International Lead and Zinc Study Group at its meeting in January agreed that restrictions on supplies of zinc should be removed, but that those for lead should remain in force. Zinc's position subsequently deteriorated and by September the price had fallen to £87. Lead's statistical position proved to be better than had been anticipated, but producer stocks are enormous and prices have broken through the "resistance point" of £70. After a four-day session in September the Study Group concluded that the situation in zinc warranted no action, but that, failing a substantial increase in consumption, any significant reduction in the abnormal level of lead stocks could only be achieved by curtailment of mine and metal production. At that time the general opinion was that the consumption and production of both metals was roughly in balance, but the difficulties of the motor car industry are currently a worrying factor for both metals. Towards the end of the year heavy falls occurred in the L.M.E. prices of both metals, and U.S. prices were also cut. A favourable factor in the short-term outlook is the rising demand from the Far East and particularly Japan.

Throughout 1960 vigorous efforts were made by U.S. mining interests to push through legislation to assist domestic lead and zinc producers, whether by higher import duties or by support for small mines. These efforts were thwarted, at any rate for the time being, by President Eisenhower's rejection of a Bill passed by Congress to subsidize small producers.

If 1960 has in some respects been a disappointing year for North American producers of primary aluminium, it is only because initially expectations were pitched too high. Despite some curtailment of production the industry is operating at a high rate of capacity in both the U.S. and Canada, and in the former country a record production seems assured. A feature of the year has been the steep rise in U.S. exports, more especially to Britain and Western Europe, where demand has been at record levels. Canada has also been heading for a record export year. The industry's confidence in the future is indicated by the construction of new plants or extensions throughout the world.

Of outstanding importance to the Commonwealth is the newly formed partnership between Consolidated Zinc and Kaiser Aluminium for the establishment of an integrated aluminium industry in Australasia, based on North Queensland's vast bauxite resources, as reported in our issue of December 2. The year ends with the long-deferred Volta scheme within sight of materializing. The Ghana Government announced in August that it had obtained assurances of loans totalling £30,000,000 for the Volta River hydroelectric project, conditional on a satisfactory agreement being reached with Valco, the Anglo-U.S.-Canadian consortium set up by Kaiser, for the construction of the aluminium smelter. Subject to the conclusion of satisfactory financing arrangements, Valco has now agreed to go ahead.

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**"The Mining Journal" sends to all its readers everywhere best wishes  
for a Happy Christmas and a Prosperous New Year**

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Among the newer metals, beryllium is attracting particular attention, not only because of its nuclear properties, but also because it offers a unique combination of high strength-weight ratio and high heat-resistance which points to a growing field of applications in jet aircraft and missiles. The year has also been notable for the recovery of the titanium industry in the U.S. In Britain, too, demand for titanium is increasing and will have been further stimulated by the major price reductions announced by Imperial Chemical Industries early in September.

Although coal stocks in Britain and Western Europe remain inordinately high, sales are now rising and stock-piles are beginning to decline. In the United Kingdom, however, coal's competitive position has scarcely been improved by the recent increase in price, which may not be the last. The coal situation in North America is looking distinctly brighter, with production rising in both the United States and Canada.

Technological advances in shaft sinking and tunnelling continue to be reflected in the succession of record performances which were such a feature of 1959, and it might be added that these are by no means confined to our own side of the Iron Curtain. Other notable developments include the increasing trend towards the application of electronic techniques to the control of power shovels and other mining equipment as well as in most aspects of mill control. In the United States it has been reported that industrial engineering know-how is being used at a rapidly increasing rate by mining companies for cutting and controlling costs.

## Trends in Copper Smelting

REFERRING to current practice, the author pointed out that some smelting plants were using preheated air in firing reverberating furnaces. A little thought is being given to preheating of such combustion air to even higher temperature by utilizing the exhaust of the modern gas turbine. If this becomes successful, power would be produced from both ends of the reverberatory furnace. Many metallurgists are contemplating how they can use oxygen in converting matte, and at the same time control the heat and put it to profitable use.

Regarding the creation of new plants, a note of criticism was sounded. It has become the fashion, states the paper, for new smelters to be designed under contract between the prospective owners and some large engineering organization, set up not only for consultation, but for design and supervision of the construction. Such arrangements with absentee engineers may have a number of advantages, but certainly there is a disadvantage in that the old, close liaison between the operating department and the designing department has been considerably impaired. Furthermore, there has been noticeable tendency on the part of the owners and such absentee designing contractors to avoid "sticking out their necks". Some owners have actually given orders that they wanted no untried schemes to be incorporated in the projected plants. Real innovations are coming to be less frequent.

The margin of leadership in production that has been held in the United States for decades has been narrowing, it is pointed out. Although the United States volume has not decreased, the share of the world total has declined from the 60 per cent of forty years ago to about 25 per cent. Leadership in metallurgical achievements is likewise being divided; so the present and immediate future is and

One of the year's most important events, technologically, was the International Mineral Processing Congress, held in London by the Institution of Mining and Metallurgy during the period April 6-9.

Minerals exploration proceeds apace. During the year a number of major surveys have been embarked upon with aid from the United Nations' Special Fund and also, in some instances, with financial and technical assistance from the Soviet bloc. Because of their high cost, modern methods of mineral prospecting are beyond the resources of all but the major companies or groups. In Canada many small companies are solving this problem by syndication, a practice being increasingly adopted by larger concerns.

As the year closes, the United Kingdom Government is confronted with the necessity for steering a difficult course between the desirability of stimulating an economy which, in some sectors, has begun to flag, and the paramount importance of bringing the payments situation into better balance. In view of the huge programmes of mining expansion in progress or projected throughout the world, manufacturers of mining machinery and equipment should be well placed to make a growing contribution to exports in the coming years. An important development in this connection has been the formation of a British Mining Equipment Export Association, whose objectives include the establishment of a close liaison with Whitehall, as well as with financial institutions in the City and with foreign governments and international agencies upon whom the creation of new export opportunities depends.

*The history of copper smelting was reviewed by Charles R. Kuzell in a paper presented as the Extractive Metallurgy Division Lecture at the 1960 annual meeting of the American Institute of Mining, Metallurgical and Petroleum Engineers. This survey is an abstract from the paper, which was published in Transactions of the Metallurgical Society of AIME*

will witness a reawakening of metallurgical thought beneficial to the smelting art. Recent events have so inflated the prices of labour, fuel, and usual commodities that the cost of copper smelting *per se* is an item no longer to be neglected. There will be real efforts made not only to reduce it to a lower level, but perhaps to wipe it out entirely by developing a greater yield of power and by-products.

The principal deterrent to commercial development of by-product schemes in the past has been that most copper ores were smelted where markets have not existed for heavy cheap commodities like iron and sulphur. In the United States, where the phenomenal growth in the West may bring the market closer to mining and smelting communities, economics may permit the successful adoption of processes for the recovery of many by-products; and copper smelting will become a source of additional profit. The possibilities are intriguing challenges to the metallurgists of today and tomorrow.

## Russia's Probable Tin Stockpile

CASUAL review of the meagre factual data available on the tin economy of the U.S.S.R. suggested the possibility that substantial stocks of tin may have accumulated in the country during the post-World War II period. A study was undertaken to assess the validity of this assumption and to determine the order of magnitude of the Soviet tin stockpile. The study necessarily involved arbitrary assumptions regarding basic technological factors and extensive estimation to fill in large gaps in the statistical record. Despite these uncertainties, it is believed that the U.S.S.R. does possess large tin stocks. Quantitatively the study revealed stocks totalling 57,000 tonnes of tin. The possible margin of error in this figure ranges from 50 per cent below to 50 per cent.

The only statistical data on tin published by the U.S.S.R. since the end of World War II relate to foreign trade from 1955-1958. Trade statistics for previous years are incomplete; production and consumption figures are essentially guesses based on scattered bits of information.

Production figures are estimated on the basis of pre-World War II production extrapolated to reflect occasional reports on annual and Five-Year Plan production increases expressed in per cent of some previous indefinite base, and geological and mining activity reported in some tin-bearing areas of the U.S.S.R.

Imports have been determined on the basis of published Soviet import statistics for 1950 and from 1955 to 1958, and export trade statistics of various Free World countries and interpolations for the period, 1951-1954.

Since China came into the Communist fold it has become a major factor in the Sino-Soviet tin supply picture. To make an accurate estimate of China's contribution to the bloc's tin supply, particularly for the first half of this decade, is practically impossible. Soviet trade statistics for 1955-1958 indicate that all tin imported into the U.S.S.R. during that period was from China. A Soviet journal on foreign trade stated that the U.S.S.R. imported 3,800 tonnes of tin from China in 1950. We have assumed in our estimate that Chinese shipments of tin to the U.S.S.R. during the years 1951-1954 have grown in nearly equal intervals.

Exports represent data published by the Soviet Union from 1955 to 1958, import trade statistics of various Free

The author of this study is Alexander Gakner, Division of Foreign Activities, U.S. Bureau of Mines, Washington. It is interesting to compare Mr. Gakner's estimates of Russian tin production with those given by Lt.-Col. Jan Kowalewski (*The Mining Journal*, April 1, 1960, p. 383 and September 16, 1960, pp. 306 and 307), which are substantially higher

World countries, and estimated needs of the European satellite nations.

Consumption estimates are based on meagre information on the Soviet tinplate industry; substantial interpolation was necessary. The Russians reported tinplate production for the period, 1952 to 1958; previous years had to be guessed. The U.S.S.R. also reported that the pre-World War II consumption of tin for tinplate was about 25 kg./tonne and that in 1937, 12.5 per cent of the total tin consumed in the U.S.S.R. was used in tinplate. In recent years consumption of tin for tinplate reportedly was at the rate of 18 to 20 kg./tonne, and approximately one-third of the total tin consumed was used in the manufacture of tinplate.

The compilation of Soviet tin stocks shown in the table below is based on the foregoing assumptions. It was concluded that the U.S.S.R. would not have been able to maintain the estimated level of consumption from 1946 to 1949 (the period prior to China's coming into the Communist fold) unless it had at least a 5,000-tonne stockpile at the end of World War II. This conjecture is supported by the fact that during the war the Russians received substantial quantities of tin from the United Kingdom and China which at that time fought against the Axis. The tabulation indicates that Soviet tin stocks at the end of 1958 were about 57,000 tonnes, equivalent to a 3½ year supply at the 1958 estimated rate of consumption.

About 10 per cent of the tin used in the tinplate industry probably is returned in the form of scrap. If this metal is reflected in the actual consumption estimates the Soviet stockpile conceivably could be 4,000 tonnes larger.

Estimated Soviet Tin Supply Position, 1946-1958 and Probable Stockpile of Tin Metal (in tonnes)

Year	Production	Imports	Exports	Apparent <sup>1</sup> Consumption	Actual Consumption	Stock Changes + Additions - Subtractions	Total Stocks at end of the Year
1945	NA	NA	NA	NA	NA		5,000
1946	5,000	1,500	100	6,400	6,700	- 300	4,700
1947	5,500	insig.	insig.	5,500	7,000	- 1,500	3,200
1948	6,500	300	100	6,700	7,300	- 600	2,600
1949	7,500	1,500	500	8,500	7,600	+ 900	3,500
1950	8,000	4,400	1,500	10,900	8,200	+ 2,700	6,200
1951	8,500	6,300	2,000	12,800	8,600	+ 4,200	10,400
1952	9,000	8,800	2,000	15,800	9,200	+ 6,600	17,000
1953	9,500	11,000	2,000	18,500	10,300	+ 8,200	25,200
1954	10,000	14,000	2,000	22,000	12,100	+ 9,900	35,100
1955	10,500	16,900	2,100	25,300	12,800	+ 12,500	47,600
1956	12,000	15,700	3,300	24,400	13,100	+ 11,300	58,900
1957	13,200	22,000	18,300	16,900	13,700	+ 3,200	62,100
1958	13,700	19,400	22,300	10,800	16,100	- 5,300	56,800
1959	15,200*	20,800†	18,100†	17,900	17,700‡	+ 200	57,000
TOTAL	134,100	142,600	74,300	202,400	150,400	52,000	

<sup>1</sup> Production plus imports, minus exports.

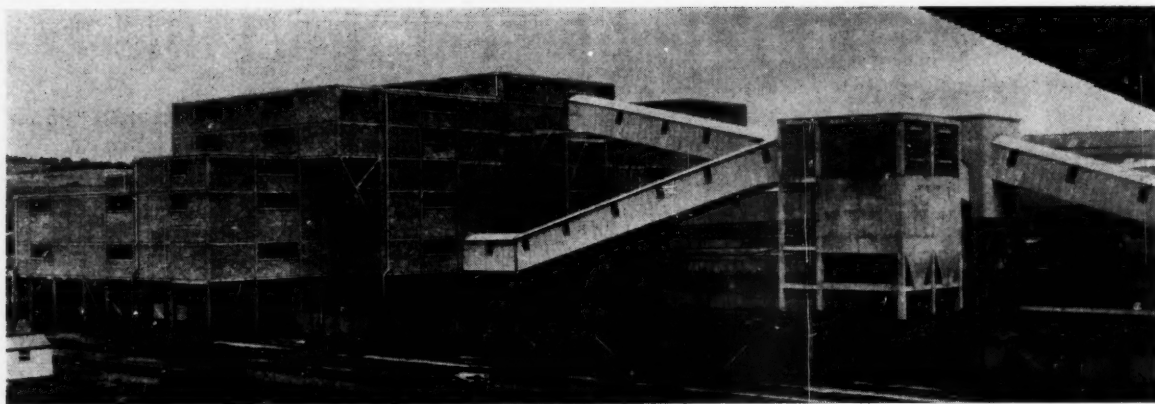
NA Basis for estimation not available.

\* Estimated.

† Soviet figure.

‡ Estimated 10 per cent increase over previous year.





## COAL PREPARATION PLANT AT CYNHEIDRE COLLIERY

**T**HE new coal preparation plant operates on the two-process principle and has a maximum capacity of 400 t.p.h. A complicated dirt crushing plant, with a capacity of 120 t.p.h. can feed dirt back to the pithead for underground stowage, or to a bunker for ultimate disposal on a refuse tip.

As part of the contract G.E.C. has supplied a 24½ ton capacity side-discharge wagon tippler. Hoisting, lowering and changing a wagon takes 120 secs. and thus the capacity of the tippler plant is sufficient to keep the washery fully supplied with coal if there is no output from the mine. The equipment consists essentially of a cradle upon which the wagon is placed, supported between a pair of chain-driven cradle arms. Side and top bolster cushions hold the wagon in position during the tipping operation and a pair of counterbalance weights reduce the amount of power needed.

From the pithead, r.o.m. coal is discharged on to a conveyor system, fitted with automatic weighing equipment, feeding raw coal into the wagon tippler hopper. Coal is extracted from the hopper at a uniform rate of 400 t.p.h. by means of a Sherwen vibrating feeder and directed on to a belt feeding No. 1 primary raw coal screen which is of the shaker type. This double deck screen separates the material into three sizes, namely +6 in. 6 in. x 3 in. and -3 in.

The -3 in. fraction is conveyed direct to the two secondary raw coal screens, while the 6 in. x 3 in. is fed into a Pegson Gyrasphere set to reduce the product to

-3 in. Meanwhile, the +6 in. from the primary raw coal screen is discharged on to a 48 in. wide picking belt where, after removal of tramp iron, it is reduced to -6 in. by a Pegson gyratory crusher. The products from both Pegson crushers are then directed to No. 2 primary raw coal screen. This screen is fitted with a 3 in. dia. mesh with the "throughs" passing by conveyors to the two secondary raw coal screens, and the oversize being directed through the Pegson Gyrasphere. Small pieces of tramp iron are prevented from entering the washery by the siting of a 65 in. dia. Witton-Kramer magnet suspended over the conveyor leading to the secondary raw coal screens.

Provision has been made in the conveyor system feeding the secondary raw coal screens for the -3 in. raw coal to be diverted into an emergency bunker in the event of a stoppage in the washery. In this way continual working of the pit is not interrupted. If this emergency outloading is carried out, the coal can be re-introduced into the coal preparation circuit by means of the wagon tippler provided.

Two secondary raw coal screens of the shaker type are installed and they are fitted with ¾ in. dia. perforated plate. The oversize from these screens, 3 in. x ¼ in., is conveyed to No. 1 Chance Cone, and the throughs, ¾ in. x 0, are laundered to a battery of eight Sherwen vibrating screens fitted with 1/16 in. square mesh. From this battery of screens the ¾ in. x 1/16 in. is discharged into No. 2 Chance Cone, while the throughs flow to the slurry basin.

The two 12 ft. dia. Chance Cones deal with a different size of raw coal. No. 1 Chance Cone receives 3 in. x ¼ in. and is arranged for a three-product separation, namely clean coal, middlings and refuse. Clean coal floats from the cone are desanded and dewatered on a shaker-type screen; the middlings product is desanded and dewatered on a partitioned section of the clean coal desanding screen; and the refuse, from the underside of the cone, is desanded and dewatered on another shaker-type screen.

The ¾ in. round x 1/16 in. square raw coal being treated in the No. 2 Chance Cone is also graded into three products, clean coal, middlings and refuse. Two shaker-type desanding and dewatering screens handle the clean coal, while separate desanding and dewatering shaker-type screens are provided for the middlings and refuse.

From No. 1 Chance Cone the clean coal product is conveyed to sizing screens where it is graded and collected by boom loaders for ultimate discharge into wagons. Arrangements allow for the removal of any degradation (i.e. -½

Cynheidre Colliery, near Llanelli, in the South Wales Division of the National Coal Board, was officially opened recently by Mr. H. E. Collins, C.B.E., a member of the Coal Board. Associated with the project is a £1,000,000 coal preparation and dirt crushing plant, designed and installed by the Fraser and Chalmers Engineering Works of The General Electric Co. Ltd. Although the new plant has resulted in the closing of at least part of the surface plants at nearby Crosshands, Great Mountain and Blaenhirwaun Collieries, it will, when up to maximum capacity, contribute greatly to the streamlining of the industry. The technical mining aspect of the project was described in our issue of December 2, 1960



At left, on opposite page, a general view of the plant. On this page, at right, alongside, the bottom of one of the two Chance Cones, showing the refuse discharge gate. Below, at right, the Fraser and Chalmers wagon tippler in operation. At bottom of page, on the right a battery of eight Sherwen electromagnetic vibrating screens with  $\frac{1}{16}$  in. mesh, and at left clean coal dewatering and desanding screens

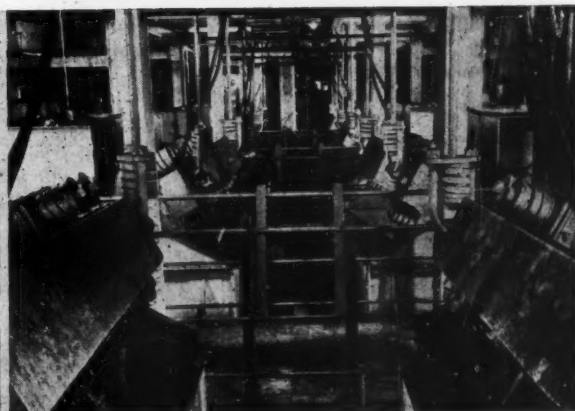
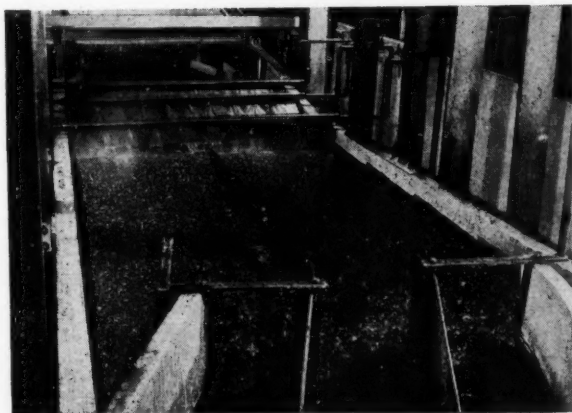
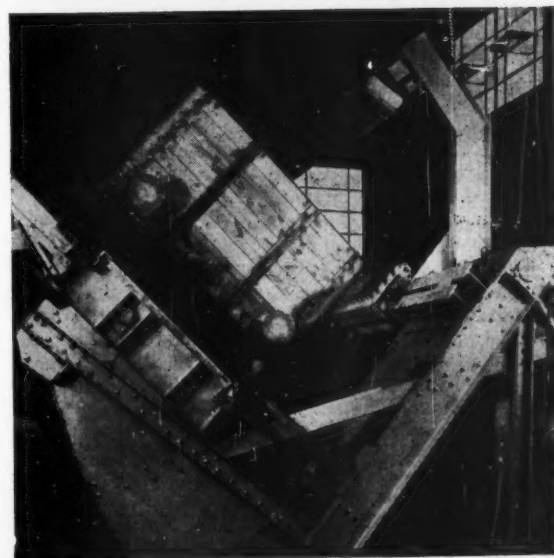
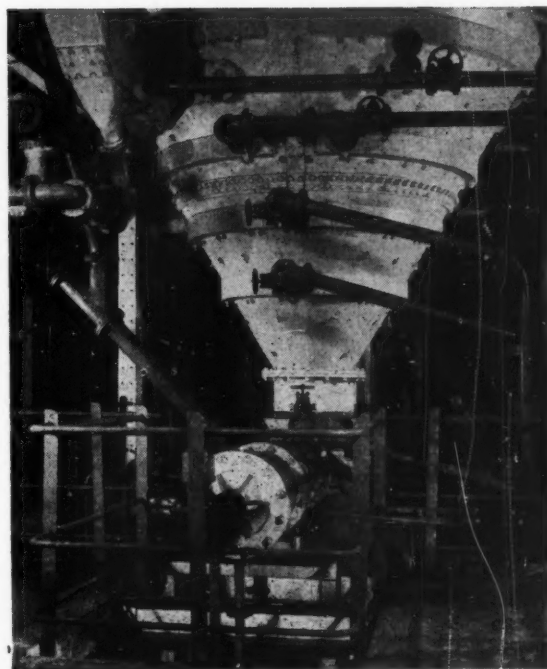
in.) from No. 1 Chance Cone. This degradation is laundered to the effluent pit from which it is pumped up and passed over the eight Sherwen screens feeding Chance Cone No. 2.

The clean coal product from No. 2 Chance Cone is separated into two sizes on the desanding screens. The grains,  $\frac{1}{8}$  in. x  $\frac{1}{4}$  in., are conveyed to the appropriate boom loader, and the fines fraction,  $-\frac{1}{8}$  in., is fed through a 50 t.p.h. scraper conveyor to two 100 t.p.h. centrifuges, one of which is a standby. These centrifuges extract the moisture from the small coal which is then joined by the filter cake and passed through a double-paddle mixer to a bunker, ready for disposal by wagons.

The  $-\frac{1}{16}$  in. square raw coal in the slurry basin is pumped to the head boxes of the froth flotation plant, which serve to regulate the amount of slurry delivered to the flotation cells. Wedge wire at the top of the boxes allows material to be returned to the Sherwen screens for resizing. The underflow from the head boxes is delivered to the flotation cells for treatment, the clean coal concentrates then being laundered to a battery of four rotary vacuum filters for dewatering. These filters are arranged in line, so that the filter cake can be collected and discharged on to the belt feeding the double-paddle mixer or by a chute direct into wagons. The filtrate is laundered to the clarifier.

Tailings from the froth flotation cells are passed over high speed dewatering screens, the  $+\frac{1}{4}$  mm. material going on to the  $\frac{3}{8}$  in. x 0 belt feeding the refuse tip storage bunker, and the sludge being laundered to the 105 ft. dia. clarifier.

Four diaphragm pumps extract the thickened sludge from the underside of the clarifier, and deliver it to two rotary vacuum filters for dewatering, or in the case of an emergency to a sludge sump. The  $\frac{1}{16}$  in. x 0 cake from the filters is conveyed direct to the refuse tip storage bunker. At the same time the diaphragm pumps can also deliver the thickened sludge through a buffer tank to three filter presses for dewatering. From these presses the filter cake is then passed to the  $\frac{3}{8}$  in. x 0 refuse belt feeding this bunker.



## PLATINUM'S EARLY DAYS

COVERING a period from the earliest times to the 1880's, *A History of Platinum*, by Donald McDonald, has been published by Johnson, Matthey & Co. Ltd., of London. Priced 35s. the book contains 250 pages and is well illustrated. This history concentrates on the obtaining of supplies, the refining of the raw material, the fabricating of the product and the marketing of the results.

Before the period 1880-90 work on platinum was of a fundamental nature and it was largely conducted by scientists, who published the results of their efforts. Beyond the 1880-90 period, the position became very different, since the platinum industry, in Europe at any rate, had moved out of the laboratories and into the factories where trade secrets were jealously guarded.

After dealing with the very early attempted work on platinum outside Europe, the platinum of New Granada and early scientific inquiries into the properties and nature of platinum, Mr. McDonald describes early attempts to work platinum during the latter part of the 18th century, which demonstrated how the precipitate of platinum could be calcined to metal, thus paving the way for standard platinum refining practice. The history then deals with the arsenic process and the French goldsmiths; the rise and fall of the Spanish platinum industry; the revival of interest in platinum in England as the 18th Century drew to a close; and the work of Allen and Cock.

This brings the history to the time of William Hyde Wollaston, who was the first man to refine native platinum on a logical and scientific basis. In the course of his work on platinum refining four new chemical elements were discovered. Later, he became the first to work platinum for commercial use.

Wollaston's identification of palladium and rhodium coupled with Tennant's discovery of iridium and osmium disclosed the real composition of native platinum and enabled it and various products obtained from it to be refined and analysed, though it was some time before the lessons of Wollaston's chemical work were to be fully absorbed into the routine of refining and working platinum, and his work on the fabrication of the metal took even longer to be commercially employed.

Meanwhile, in France after the revolution, other methods of treating platinum were being tried. To obtain platinum reasonably free from iridium, the French set about separating it physically from the first platinum sponge by treatment of the latter with weak aqua regia. Their recovery of palladium was based on Vauquelin's procedure of precipitating "an ammonia proto-sub-muriate of palladium" (dichloro-diammino-palladium) and not on Wollaston's equally effective use of mercuric cyanide. They also took steps to isolate and collect the rhodium and osmium.

In Russia, too, some work had been done on platinum when, in 1819, osmiridium was found in the Urals gold-fields. In 1824, the first native platinum was found in gold placers there. Between 1819-43 the Russians explored and opened up the important new source of native platinum that was to supply practically the whole world's needs from the 1860's until at least 1917. The Russians also made the first intensive examination of the chemical and physical properties of the whole group of six platinum metals.

Around this time Berzelius standardized the methods for the analysis of platinum metals; Kuhlman was the first to

use platinum as a catalyst for the oxidation of ammonium to nitric acid; Claus discovered ruthenium and did much valuable work on iridium and rhodium; while Wohler discovered the method of attacking osmiridium by roasting it with common salt in a stream of chlorine. Deville with Debray and their collaborators then introduced the lime furnace which enabled platinum to be melted commercially and on a large scale. Their work also covered the refining, alloying and fabrication of the platinum metals, bringing science and practice together to make an important industry possible.

By 1880, the primary work of mining, extraction, refining and fabrication of platinum metals had become the fields of private commercial enterprise and the scientists devoted their attention more to the chemistry and physics of the compounds of the metals. The raw material came almost entirely from Russia where the Western European refining houses also made themselves mine owners. By this time, too, a definite international market, based on Paris, was sustained by the three principal refining houses, Desmoutis Quennessen, in Paris, Johnson, Matthey & Co., in London, and Heraeus in Hanau. Thence, there was an international price for the metals fixed by the refining firms and based on supply and demand and current and future prospects.

Interested in platinum from foundation in 1817, Johnson, Matthey & Co. became a factor of international importance after 1851. From 1860, the firm consisted of a strong partnership between George Matthey, the senior, John Scudamore Sellon and Edward Matthey, who remained in control of the firm for fully 50 years. During that time a great business was built up that has been a leading element in the world of platinum ever since, particular attention having been given to the design and construction of boilers for the concentration of sulphuric acid and to the provision of a standard metre for the metric system, as well as to a new method of platinum refining.

During the first half of the 19th century there was little or no refining or fabrication of platinum in the U.S. and the small market was satisfied by the European houses who worked through agents in New York and Philadelphia. In 1842, the first U.S. platinum fabricating plant was inaugurated but even by 1890 there was little trade except with Europe.

In 1901, Charles Engelhard, who had been the American representative of the Syndicate of European platinum interests, embarked, with the knowledge and participation of the European firms, on a policy of expansion, acquiring, among other firms, the American Platinum Works and Baker & Co. In 1917, on America entering the first world war, Engelhard acquired the German Heraeus shareholdings; later the French shares and those of Johnson, Matthey & Co., thus becoming head of the Baker group. The group was later able to make use of a new source of platinum metals which were derived from the treatment of Ontario nickel ores by the Mond process. These by-products of nickel treatment were first refined by Johnson, Matthey & Co. in London until 1919, then by the Mond Nickel Co.'s English refinery. When Mond Nickel entered into an alliance with the International Nickel Co. of Canada, however, the product of their joint efforts was treated in their own refineries and passed to Baker & Co. for disposal, making the latter company a prominent and even dominant factor in the platinum market.

**Machinery and Equipment****Underground Blasting with Ammonium Nitrate**

Testing with ammonium nitrate blasting by International Minerals and Chemical Corporation, United States, has shown that the new process is safe and efficient. In addition it offers "significant cost reductions" over conventional methods. An excerpt from a paper *Underground Ammonium Nitrate Blasting* presented at the recent American Mining Congress was published recently in *The Northern Miner*. I.M.C. has found that ammonium nitrate blasting material cost \$11.76 against \$20.46 for conventional on a typical mining face.

Now of wide usage in openpit mining, ammonium nitrate was first used underground in 2 in. and 2½ in. blast holes by mining companies in Iowa and Oklahoma. I.M.C. tests were carried out during July and August of 1960 and in general fragmentation was found to be good. Moreover, blast fumes did not present an unsurmountable problem, despite previous fears and the former opinion that ammonium nitrate could not be detonated reliably in holes smaller than 4 in. dia. Reliable detonation was found at the ratio of about 80 per cent ammonium nitrate.

Blast holes were loaded in the following manner: An ammonium nitrate cartridge was placed in the back of the hole as a cushion followed by an 8 in. primer stick consisting of a stick of 45 per cent bulk strength dynamite and a millisecond-delay electric blasting cap. Then three more ammonium nitrate cartridges were added and tamped well. Another stick of dynamite was added, followed by the remaining three or four ammonium nitrate cartridges and then the hole was tamped again. In these tests the powder factor was purposely held higher than in conventional blasting. Fragmentation was generally as good as dynamite and therefore this round was used as a standard round in subsequent fume tests.

Several other test rounds were fired, using primacord, higher velocity dyna-

mites, and with other AN to dynamite ratios, but none gave as reliable results as the round described. It was found that air-placed nitrate (placed by pneumatic machine) offered several important advantages over cartridge material. Air-placed nitrate completely fills the blast hole to a density higher than that which can be obtained by tamping. This results in improved coupling with the rock and thereby greatly improved efficiency of the blast. It is believed that no static hazard is created by the air placement process.

A bulk loading process was later developed whereby the material flows into the holes through a 50 ft. length of 1 in. I.D. neoprene hose and a 10 ft. length of 1½ in. O.D. polyvinyl chloride rigid plastic tube. With practice, the hole can be filled to within 3 ft. of the collar with a dense, uniform column of ammonium nitrate in less than 15 secs. Blastholes so loaded each contain about 4 lb. AN.

**POWERFUL X-RAY MACHINE**

What is claimed as the world's most powerful x-ray machine designed for high speed radiography in the metals industry will be installed at the A. O. Smith Corporation's Milwaukee, United States, plant next spring. The eight million-electron-volt linear accelerator is now being built for the corporation by High Voltage Engineering Corporation.

The Linear accelerator, or Linac, is designed to see through steel more than a foot thick and to furnish photographic proof of the soundness of such metal structures as core barrels. It has been stated that the project will cost \$700,000.

The Linac produces its x-rays by "firing" high-energy electrons in a straight line down an evacuated tube. The electrons from the Linac move down the tube, impelled by travelling



The Atlas Copco BVE 14 wagon drill

radio-frequency waves. These radar pulses accelerate the electrons until they approach the speed of light, or 186,000 m.p.s. At the end of the tube, the electrons strike a tungsten target and produce penetrating x-rays which are beamed upon the material to be examined. The operating head or tube of the Linac will be 11 ft. long and 30 in. dia., with a 12 in. radiation aperture.

For example, at full power and at a distance of 9 ft., the 5 mm. focal spot source will x-ray an 11 in. thickness of steel in about one minute, or 16 in. of steel in about 18 minutes. The 1 mm. focal spot source provides even greater clarity or resolution. It will radiograph 8 in. of steel in about one minute, or 14 in. of steel in about 30 minutes.

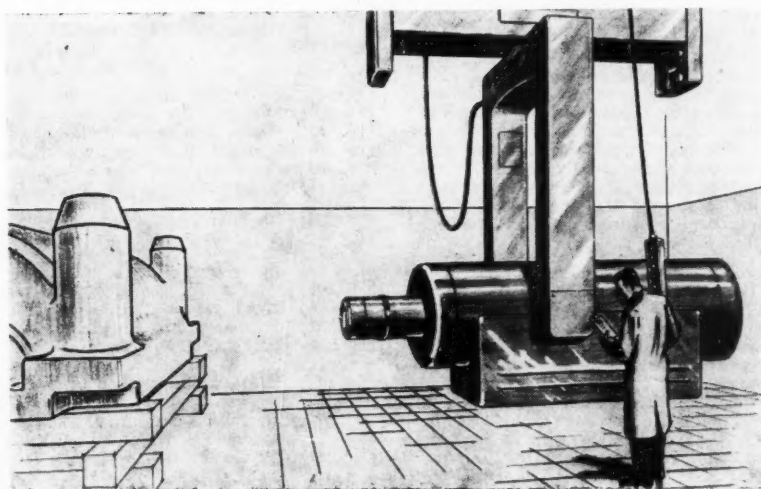
**NEW WAGON DRILL**

A new wagon drill, the BVB14, was a last minute exhibit on the stand of Atlas Copco (Great Britain) Ltd. at the Public Works Exhibition. The BVB14 is based on the company's BVB13 wagon drill, but with notable modifications.

Instead of being dispersed at various points, all controls have been gathered together into a single panel. The four levers control respectively the feed motor, the drill, the flushing operation, and the reverse rotation of the drill.

This new Atlas Copco wagon drill operates at any angle within a 130 deg. vertical arc as well as close to the rock face. It takes 8 ft. steel changes for holes up to 50 ft. in depth.

The versatile overhead crane mounting of the High Voltage Engineering Linac permits raising the machine from floor level to a height of 16 ft. It can be tilted to point the x-ray beam at any angle from vertically downward to 45 deg. upwards. It may also be rotated in the horizontal plane





# MINING MISCELLANY

The Government of Guinea is at present negotiating with the Japanese company Kinoshita and the United States Steel Corporation regarding possible future exploration of iron ore reserves in the Nimba Hills.

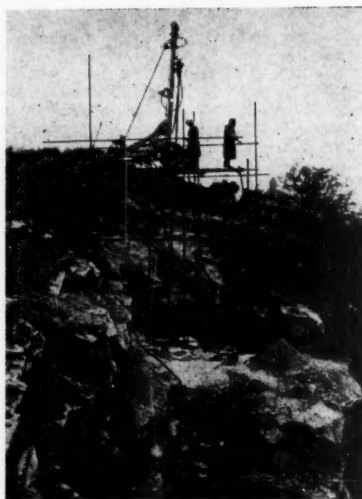
The first two years of the 1958-60 Three-Year Plan in North Vietnam have seen realization of planned targets to the extent of only 59 per cent, according to the Minister of Industry. In the first two years of this Plan coal output rose by 50 per cent but did not reach pre-war standards, while exploitation of such minerals as antimony, tungsten and bauxite, was not started. Completion of the ferrous metals plant of Thai Nguyen, it is stated, is no longer expected for the foreseeable future due to a slowing up of Communist China's programme of industrialization. North Vietnam has undertaken to supply goods including coal and chrome ore to China in exchange for ferrous metals and other goods until at least 1962. It was expected that a new 500,000-tonne phosphate plant would have been opened by the end of 1960.

Under a contract signed between Stolberger Zinc AG, of Aix-la-Chapelle, West Germany, and the United Arab Republic, a Stolberger mining and smelting consultant subsidiary — Stolberger Ingenieurberatung für Bergbau und Huttenbetrieb GmbH — is to examine copper-zinc and lead-zinc deposits in the eastern desert area of the Egyptian province of the Republic and advise on the processing of the contained ores. The mother company will undertake the training of 27 Egyptian experts. The contract is in the framework of an agreement between the U.A.R. and a West German consortium, the other member companies of which are Klöckner-Humboldt-Deutz AG, of Cologne, and Klöckner Industria-Anlage GmbH, of Duisberg.

It has been announced in Bangkok that Thailand is in future to add tin to the list of items which it exports to the Soviet Union.

The Italian company, Amienda Minerali Metallici, has held negotiations with West German interests in Rome regarding the possibilities of better utilization of zinc reserves in Sardinia, Bergamo and in the Adige area.

Mining Corporation (Australia) N.L. has abandoned work on its leases at Mount Isa and Mount Novit because prospects do not warrant further investigation. On the evidence available, any further work would be of a speculative nature, states the managing director, Mr. F. R. Beggs, in the annual report. At Mount Isa it was considered fruitless to search for an extension of the known Mount Isa orebodies within the area held by the company. Holes drilled on the special mining lease 5364, south of Mount Isa Mines, generally found little interest. The company is at present drilling a prospect to the south of lease 5364.



The Holman Vole drill in action

Pascoe Brothers are monumental stone workers who need granite in large blocks from their quarry at Helston. They recently contacted Holman Brothers Ltd. for a machine to drill an accurately directed vertical hole down to 30 ft. in granite. Holman's considered that a Vole drill would be the best machine for the job. An inspection of the quarry showed that the hole was required too close to a vertical rock face to allow space for any form of mounted machine, further, only the minimum amount of overburden had been removed. Pascoe's therefore erected a scaffold so that the Vole drill could be wheeled out at surface level to a point immediately above where the hole was required. The accompanying photograph shows the drill in position. The hole was drilled to 33 ft. without difficulty although it was necessary for a man to guide the bit during the initial collaring.

Production has started in Chile at the iron ore mine of Las Adrianitas, near Copiapo, Atacama. The mine is owned by the Compania Minera de Atacama, a subsidiary of Mitsubishi Shoji Kaisha of Japan, and is scheduled to produce 50,000 tons of ore monthly in the first year, and subsequently 100,000 tons monthly. Seven 20,000-ton ships have been contracted to take the ore to Japan.

Exports of iron ore from Venezuela to the U.S. in the first half of 1960 totalled 8,000,000 tons, compared with 6,300,000 tons in the same period last year. U.S. iron ore imports in the first half of 1960 amounted to 17,400,000 tons, of which Venezuela delivered about 46 per cent, the other main suppliers being Canada, with 22 per cent, Chile with 12 per cent, Peru with 11 per cent and Brazil, 4 per cent.

Early in December it was announced that Cuba's only copper mines, at Matahambres, 20 miles from Pinar del Rio, western Cuba, had been closed for 40 days. According to the Mineworkers' Union a search is in progress for new copper veins. It is understood that the veins formerly worked are exhausted.

The Federal German Ministry for Economic Affairs reports that under a technical aid scheme the German mining expert Dr. Illner has undertaken an examination of kieselguhr deposits in Iceland, as well as a study of the economic possibilities for exploitation. His report has been published by the Icelandic Government.

Five million tonnes will be the annual iron ore processing capacity of a ferrous metal complex, construction of which has been started at Krenikovtsi near Sofia, Bulgaria. The ore will be taken from nearby deposits.

The Anaconda Co. announce that they have acquired an option on 103 beryllium claims in Nevada, owned by Mt. Wheeler Mines, Inc., covering an estimated 2,000 acres. The option is for two years. Anaconda are also interested in the Jeppson claim group north of the Mt. Wheeler claims covering 300 acres, and are planning extensive development in the area.

The Hungarian planning authorities have stated that a number of industrial projects in Hungary, including the construction of the Rudabanya ore concentration plant, and the expansion of the Ozd ferrous metals plant, are behind schedule.

The initial capacity of a new West German plant to be set up at Aix-la-Chapelle by the recently formed local company, Stolberger Zincoli G.m.b.H. für Zinkstaub, is to be 80 to 100 tonnes annually. The company is a subsidiary of Amalgamated Oxides (1939) of Dartford, Kent, and Stolberger Zink A.G. für Bergbau und Huttenbetrieb, of Aix-la-Chapelle.

Under a recent trade agreement, Poland is to supply the Soviet Union in 1961 with goods including coal and zinc, and Russia to supply Poland with iron ore, manganese ore, non-ferrous metals, mineral oil, and other products.

Under the framework of a Development Loan Fund credit grant to Turkey, a world-wide call for tenders has been issued, expiring on January 6, 1961, for machinery and equipment for chromite concentrating plant capable of concentrating 50 tons of low-grade chromite per 24 hours into concentrate of at least 48 per cent. The address to which tenders should be sent is Mehmet Kemal Ozdedoğlu, Yenisehir Akay Caddesi, Buklum Sokak No. 2, Ankara, Turkey.



**Metals and Minerals****Tanganyika's Proposals for Diamond Prospecting**

The Tanganyika Government proposes to terminate as from January 1, the diamond prospecting monopoly held in the territory by Williamson Diamonds, which, following the death of its founder in January, 1958, was bought in August of the same year by the Tanganyika Government and De Beers Consolidated Mines in equal holdings.

A Bill accepted in the Legislative Council in Dar es Salaam, divides the territory into 24 blocks, averaging 15,000 sq. miles each, which will be thrown open to "reputable mining companies". Williamsons will have prior choice of four blocks, its decision to be made by July 1 next year. Companies may apply for more than one block, but must undertake to spend £30,000 a year on each one. Applications will only be considered from established mining sources.

The Minister of Commerce and Industry, Mr. Nsilo Swai, has stated that the government looks to mining companies to come into the territory and explore for diamonds and other minerals and to develop mines. He emphasized that the government would welcome their investment and would not begrudge them a reasonable return for the risk they undertook.

**U.S. ANTIMONY STATISTICS**

Production of primary antimony increased in the third quarter of 1960, but domestic consumption declined, according to the Bureau of Mines, U.S. Department of the Interior. Smelter production increased 17 per cent over the second quarter to nearly 3,000 s.tons with most of the increase in antimony metal. Total output for the first three quarters was 12 per cent above that of the comparable period of 1959. Consumers used 3,000 s.tons of primary antimony in the third quarter or about 200 tons less than in the second quarter. There was a small decrease in imports of antimony in the third quarter, but the total for the nine months was 19 per cent above that of the corresponding period of 1959. Producers' and consumers' stocks of primary antimony increased in the third quarter to 7,216 tons, reaching the highest point since the end of 1958. Most of the increase was in metal and oxide.

**RESEARCH ON URANIUM**

Of interest to sellers of uranium is the research currently being undertaken in both Canada and the U.S. into possible non-nuclear uses. In this connection it is noteworthy that a patent has just been granted for an exclusive Canadian metallurgical process for the use of uranium as an alloy to strengthen steel (vide *The Mining Journal*, Dec. 2, 1960, p. 638). This process has been developed by the Federal Department of Mines after 14 months of extensive research. World-wide patents are being applied for.

The alloy, consisting of 1 lb. of uranium per ton of steel, is claimed to impart strength and resistance to corrosion, particularly at high temperatures. Obviously no quick results can be looked for, but the alloy is considered to have potential applications in boilers, tubing, wire, cable, drilling equipment and railway axles. Larger amounts could be used in tool steels. It is further reported that the addition of uranium to plain carbon and low alloy steels gives greatly improved endurance.

Canada's six remaining uranium producers are to finance a five-year research programme costing \$1,250,000 to find and develop uses for substantial quantities of uranium in industrial applications. The Canadian Uranium Research Foundation has been formed to carry out this programme, which will be organized and directed by Frank A. Forward of the University of British Columbia. Initially the foundation will co-operate with existing government, industrial and university groups in Canada by providing funds on a contract or grant basis. Primarily the programme will be a search for practical ideas.

**MORE ALUMINIUM PROJECTS**

Kaiser Aluminum is to construct an aluminium fluoride plant costing approximately \$1,400,000 at its Gramercy, Louisiana, works. Construction will start by the middle of next year and the plant will be completed in the third quarter of 1962. It will supply a major part of the aluminium fluoride requirements of the corporation's reduction plants. This project marks yet another step in the corporation's programme of integrating its sources of important raw materials.

A new aluminium smelter is to be built by Vereinigte Aluminium-Werke A.G., one of West Germany's largest aluminium firms. The plant will be sited at Norf, near Düsseldorf, and will have an annual capacity of 40,000 tonnes with a possible expansion to 60,000 tons at a future date. The smelter, which will cost DM.140,000,000, is the fourth to be built by the company and is scheduled for completion by 1963.

Sanction has been given for the establishment of an aluminium reduction plant of 20,000 tons annual capacity in Maharashtra, India. The plant, which would use power from Koyna, would supply ingot for the production of such lines as sheet, rod, wire, conductor and paint powders.

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According to *American Metal Market*, U.S. exports of primary aluminium are expected to amount this year to some 280,000 s.tons, or about 14 per cent of

the total U.S. production of slightly over 2,000,000 tons. This would represent the equivalent of 13 per cent of the 1959 world consumption outside of North America. World consumption of aluminium last year amounted to nearly 4,500,000 tons, of which 2,150,000 tons were used in the U.S. and 83,500 tons in Canada. The latter country is also heading for a record export year.

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In Western Germany stocks of pig aluminium in the trade and at plants producing semi-manufactures rose by 20,000 tonnes to 45,000 tonnes during the first nine months of this year. They are expected to grow by at least another 10,000 tonnes before the end of the year. One of the reasons given for the increase is the growth of exports to West Germany by foreign producers wishing to gain a permanent market in the country.

Aluminium semi-manufacturers in Western Germany stated that their production in the first nine months of the year amounted to 176,821 tonnes, an increase of 29.8 per cent as compared with the corresponding period of 1959, and that in the first eight months of the year production of aluminium castings reached 76,330 tonnes, an increase of 34.5 per cent.

**QUEBEC LITHIUM RESUMES MILLING**

A report published recently in *The Northern Miner* stated that mining and milling operations were about to be resumed by Quebec Lithium Corp. at its lithium properties in Northwest Quebec. Initially, however, Canada's sole producer of lithium concentrates and products will operate its mill at only about 100 t.p.d., or about 10 per cent of rated capacity. This rate is considered sufficient to replenish the company's inventory of glass grade concentrates and will also permit metallurgical test work designed further to improve the mine's already good grade products. Mining was suspended early in August, 1959, at which time the company had a stockpile on the property amounting to 8,662 tons of lithium concentrate, which has been used to keep customers for glass grade concentrates supplied. In addition, the existing stockpile of chemical grade concentrates was sufficient to produce 2,000,000 lb. of lithium concentrate. Since the refinery can turn out 500,000 lb. a month at peak rates, this is enough for about four months' work. The first sales of lithium concentrate are expected to be made early in the coming year.

London Metal and Ore Prices appear on inside back cover.

Owing to the Christmas holidays, our regular market features do not appear this week. They will be resumed in our next issue

## Mining Finance

# Mr. Annan Leaves a Flourishing Gold Fields

The 1960 annual meeting of Consolidated Gold Fields of South Africa saw the resignation as chairman and director of the company of Mr. Robert Annan, who has long been a distinguished figure in the British overseas mining industry, both in financial and professional circles. He is now to be Gold Fields' first president. As already announced, he is being succeeded as chairman by Sir G. S. Harvie-Watt, Mr. G. G. Potier is deputy chairman.

Mr. Annan leaves the chair at a time when the group has completed a big expansion scheme by the absorption of other finance companies and has at the same time extensively re-organized the administration of its interests throughout the world. Gold Fields of South Africa now provides all the administrative and technical services for the African side of the business. New Union Goldfields has become the Gold Fields Finance Co. (S.A.) The non-African interests, namely those in Australia, Canada, the U.K. and the U.S., have all been hived off into Gold Fields Mining and Industrial, formerly the wholly-owned subsidiary Gold Fields American Development. It may be remembered that G.F. Mining and Industrial recently made an issue of £5,000,000 7 per cent Debentures.

The current year to June 30 next will still be something of a transition period for Gold Fields, but it will see the first full year's trading of the three concerns taken over, New Union, Anglo-French and H.E. Proprietary. Mr. Annan was thus able to say, with the usual proviso that there are no "new or unforeseen factors beyond their control", that the Board expect to maintain the 5s. dividend on the capital as increased by the one for ten capitalization issue. This means that Gold Fields £1 shares, now 62s. 3d. ex the share bonus, offer the potentially attractive yield of 8 per cent and give an unusually wide spread of interest over gold and platinum as well as industrial undertakings in the U.K. and U.S.

Mr. Annan pointed out that in 1960-61 the disposal of the group's interest in Apex (Trinidad) Oilfields for an equal number of British Petroleum shares plus 4s. 6d. a share in cash "will give rise to a substantial book profit . . . which will be taxable even if not actually realized".

The future of the Gold Fields group is regarded "with confidence". Investments in the South African gold-mining industry are predominantly in the newer mines which have still to reach their peak and in others which have yet to begin production so that increasing revenue from dividends can be expected "in the near future". The search for new mines is being actively pursued. Mr. Annan, of course, recognizes the political risks in South Africa, but thinks that the country nevertheless appears likely to provide a fruitful source of investment.

As regards Gold Fields' non-African ventures Mr. Annan's view of these is that they were for the most part more recently acquired and thus require time to bring into full productiveness, but they are thought to be "full of promise".

Altogether, providing there are no major upsets in the South African scene, it looks as though Gold Fields faces a period during which it will be able at least to sustain its profits which last year, before tax, crossed the £5,000,000 mark for the first time.

Mr. Annan's speech is reported on page 718.

## HOW MUCH CAN SUNGEI BESI PRODUCE?

The one thing that Mr. G. W. Simms omits in his review of Sungei Besi Mines, the big Malayan tin producer, is some idea of the productive capacity now that the neighbouring Hong Fatt undertaking has been absorbed. It looks, however, as though—always assuming that tin restriction remains off—it will take some time for output to reach its peak. For instance, in the area being made available by the road and rail deviations mining operations are not expected to start until early in 1961. The experiment with a bucket wheel excavator, the first in Malaya, has met with teething troubles, but its performance is being gradually improved. Mr. Simms says.

It will be very interesting in the light of all this to see how much in the way of sales Sungei Besi has managed to achieve in the current quarter, due to be announced in mid-January. In the September quarter—prior to the removal of restriction—sales of tin concentrates jumped sharply to 540½ tons from 372½ tons in the June period and only 175½ tons in the September quarter of 1959. It is thus obvious that the company should be making much higher profits in 1960-61 to date, a tendency that should continue for the remainder of the period. A first interim dividend of 6d. per 4s. share has been declared, but it is difficult to compare this with the 1959-60 distributions because the four interims and a final are to be replaced henceforth with only two interims and a final. The next interim will be in April.

Sungei Besi are quoted at 22s. 9d. to yield barely 4 per cent on the 1959-60 dividend of 10.8d. It is quite obvious whether judging by the first interim or by the greatly increased tin sales, that considerably more than this is going to be paid for the current year. In the long run, if the further re-imposition of sales quotas can be avoided, the shares are probably not yet fully discounting the ultimate benefits of the combined operations of the two properties. They could thus be responsive next month if the December quarter sales figure is a good one.

## AYER HITAM'S DREDGE SHUT-DOWN

In his review of Ayer Hitam, another of the major companies in the 73 Cheapside group, Mr. Simms deals with the dredge shutdown that this company faces. Its No. 1 dredge is to be closed down at the end of the month for re-

plating the pontoon, replacing the sluice boxes by jigs and converting it from steam to electric drive. This is expected to take about nine months. In the meantime, output will have to be sustained by the new No. 2 dredge which is being modified in order to increase both its capacity and its tin recovery efficiency. The company's overall production must, however, be adversely affected during the shutdown period, but, says Mr. Simms, "the work is essential and the gain in efficiency will make it well worth while".

Ayer Hitam's September quarter sales of tin concentrates amounted to 637½ tons compared with a quarterly average of 473 tons in the year to June 30 last. Here again the December quarter sales are due to be announced in mid-January. They should be good. And in assessing the profit outlook for the second half of the financial year when only one dredge will be working it should be borne in mind that despite the increasing Malayan tax on oil and fuel (incidentally Mr. Simms makes out a strong case for its removal so far as the mining industry is concerned), it is likely that the increasing efficiency of the No. 2 dredge will reduce unit costs.

The company is joining other members of this Cheapside group in declaring only two interims and a final. The first, declared last week, was 7½d. per 5s. share. There is to be another in June and a final at the annual meeting, usually in December. As with Sungei Besi, Ayer Hitam at 21s. give only a modest yield on the equivalent dividend of 1s. 2.7d. paid for 1959-60 after taking the four for one share bonus into account. But they are a favourite among Far Eastern investors for all that despite the pending dredge close-down. There is no doubt about one thing. The company is obviously going to be in a very strong position indeed next autumn if the new International Tin Agreement that comes into being in July does not find it necessary to re-impose output restriction.

At present, under the existing Tin Agreement, there are no restrictions until at least the end of March. Mr. Simms thinks that providing industrial production activity in the U.S. is maintained there is good reason to hope that unrestricted output will continue. He also regards the price outlook as favourable with, of course, the same proviso about industrial activity.

## "TANKS" DEPENDENCE ON THE CONGO

The very full preliminary profits statement from Tanganyika Concessions for the year to July 31 last was commented on at length here on October 7. The annual report shows that out of the gross revenue of £4,827,103 the dividend of 2,200 Belgian francs on the company's holding in the Katanga copper producer Union Minière, accounted for £2,829,798, the accompanying mining royalties for £750,594 and the income from the Benguela Railway for £994,247. These figures leave no doubt

about the dependence of "Tanks" for the major part of its income on mining in the Congo and on the railway which connects that state through Angola to the Atlantic port of Lobito.

This makes it doubly important, as noted last week, that Union Minière, albeit a little belatedly and despite the Congo's troubles, has maintained its first interim for 1960 at 600 Belgian francs. For 1959 there was a second interim of like amount in February and a final of 1,000 francs in April. As the "Tanks" chairman, Captain Charles Waterhouse, points out, the Congo disorders resulted in no more than the closing of some of the Union Minière mines for a period of three to five days, "thereafter production returned to normal".

The export of copper by the northern route was suspended owing to the temporary closure of the Matadi docks, but the Benguela Railway was able to move an increased tonnage and Union Minière thus continued to make its regular deliveries to world markets. It is notable that net operating receipts of the railway have shot up to 225,000,000 escudos for the first nine months of 1960 against only 143,000,000 escudos for the same period of 1959, or £2,798,460 against £1,781,391.

There is no doubt, however, that the future of both business on the railway and of Union Minière's operations depends on a satisfactory solution of the Congo's problems and at present this seems almost as far away as ever. The railway is a Portuguese company with its head office in Lisbon. "Tanks" holds 90 per cent of the equity. Union Minière, however, is a Congo company with its registered office in Elisabethville. One of its main anxieties for the future must, therefore, be whether the Katanga or Congo Governments will be tempted to milk the company fiscally.

It is fears in this respect, plus one or two other bogies that any future Congo Government might possibly raise, that account for the low level of Union Minière shares and also for the weakness of "Tanks" which at 27s. 6d. yield as much as 13.6 per cent on the 3s. 9d. paid for 1959-60. They were as high as 49s. before the Congo troubles began. For the longer-term view "Tanks" is, of course, endeavouring to diversify its interests.

#### NEW BROKEN HILL'S NEW CONTRACT

An interesting new arrangement has been arrived at within the Consolidated Zinc Corporation group to supply lead and zinc concentrates to Sulphide Corporation's big new smelting plant which is expected to come into operation at Cockle Creek in New South Wales in the second half of next year. It will operate the new Imperial Smelting process and will be similar to that brought into production early in 1960 at Swansea where a very satisfactory level of operations has been achieved.

The Cockle Creek concentrates are to come from the group's New Broken Hill Consolidated property under a twelve-year agreement starting at the beginning of 1961, one that should give that company a return "at least as good as that obtainable from its present major customers". The concentrates will be transported by rail from Broken Hill.

In addition, New Broken Hill is to acquire at par a 25 per cent holding in Sulphide Corporation from Consolidated

Zinc of which concern the Sulphide company is at present a wholly-owned subsidiary. The cost of this acquisition will be £A1,875,000 to be paid as to £A1,400,000 immediately and the balance in the middle of next year. It is officially stated that the current resources of New Broken Hill should enable it to do this "without recourse to its shareholders for further capital".

The deal from Consolidated Zinc's viewpoint will help to bring in cash funds for its Australian and New Zealand aluminium project, the new company to develop which (owned jointly with Kaiser Aluminum) has now been registered in Melbourne as Comalco Industries Proprietary with a nominal capital of £A25,000,000. New Broken Hill will get an interest in Sulphide Corporation, one of the major suppliers of sulphuric acid and fertilisers for industrial and agricultural uses in Australia, and will also find what should be an assured outlet for a large part of its lead and zinc concentrates.

#### PROGRESS AT MOUNT MORGAN

At the recent annual meeting of Mount Morgan, the chairman, Mr. J. Malcolm Newman, gave interesting information. Australian copper consumption has increased in the past three or four years, from 35,000 tons per year to 60,000 tons. Copper producers and fabricators have combined in market research, and a centre to disseminate information on the uses of copper will be set up in Sydney.

In the last financial year the combined qualities of ore and overburden mined were 4,618,000 tons, and the smelter produced 8,189 tons of blister copper, compared with 7,933 tons in the previous year. The reverberatory furnace has a record of long runs, and the present run is now in its fifth year, and an early termination of the run is not expected.

Cost of production of blister copper from concentrate was a record at £A.40 per ton. Cost of mining decreased from 8s. 8d. to 5s. 8d. per ton, and costs in No. 1 mill fell from 19s. 10d. to 19s. 2d.

Removal of overburden from the Sugarloaf orebody will be accelerated; ratio of overburden to ore is 2 : 1. There has been no improvement in the market position for pyrite and the company has been damaged by importation of brimstone. The project for establishing an ammonium sulphate industry failed, but other possibilities for pyrite utilization are being examined.

An interesting reference was made to research work into the carrying capacity of lands in the cattle country of North Queensland, being done by the C.S.I.R.O. which has shown that the carrying capacity of these extensive cattle grazing lands can be increased three or four fold by the application of superphosphate, but until a considerably increased demand by the cattle-man is assured, the company would not be justified in embarking on superphosphate manufacture.

Search has been carried on for a possible displacement of the Mount Morgan orebody beyond the Linda fault; valuable information has been obtained, but only isolated patches of ore have been located: these are outside the calculated ore reserves which will warrant treatment.

The decision of the Commonwealth Government on future copper bounty policy is most important to Mount Morgan, and it is hoped that the future policy will not be less favourable than in the past. The higher average price for metal, plus

the bounty, was mainly responsible for the company's net profit of £A.425,712.

As Australian production exceeded local demand, considerable tonnages had to be sold overseas at world price. With continuance of that supply and demand position, and the lower world price now ruling, the bounty is very necessary for the maintenance of the company's position.

Mr. Charles W. Engelhard has joined the board of Anglo American Corporation of South Africa Limited.

The Rhodesian Selection Trust Group of Companies announces that Mr. J. P. Norrie, consulting engineer, will retire from service of the Group on February 28, 1961. Mr. R. N. Harle, who has been assistant consulting mining engineer, has been appointed consulting mining engineer with effect from March 1. It is also announced that, with effect from March 1 next the office of the consulting mining engineer will be moved from Kalulushi, Northern Rhodesia, to the Group's head office, Livingstone House, Salisbury, Southern Rhodesia.

The Chartered Bank announces that Mr. John Shewan, an assistant general manager, has been appointed a joint general manager and that Mr. R. A. S. Lane has been appointed an assistant general manager, both appointments to become effective on January 1, 1961.

#### LONDON & AFRICAN MINING TRUST

The twenty-first annual general meeting of London & African Mining Trust, Ltd., was held on December 20 at the Chartered Insurance Institute, London, E.C.

Mr. W. J. C. Richards, Chairman, presided, and the following is an extract from his Statement circulated with the Report and Accounts for the year ended September 30, 1960:—

Conditions during the year were favourable to Stock Exchange operations and the profit on realization of investments was £29,126 compared with £11,593 in the previous year. Dividends on our investments increased from £16,671 to £22,901 and income tax on these dividends rose from £3,632 to £6,051. At £38,855 the net profit is nearly double that of the year before. £15,000 has been transferred to Investment Reserve, bringing that reserve up to £60,000. We are recommending a dividend of 12½% less income tax, which will require £18,663, leaving £23,650 to be carried forward. The sum brought in was £18,458.

The market value of quoted securities exceeds the book value by £55,733 and the Balance Sheet shows a strong position. The Investment Reserve has been strengthened by £15,000 from the profits of the year in case the unquoted investment has ultimately to be written down.

During the year we reduced the proportion of our investments in mines, rubber plantations and oil and increased our investments in commercial and industrial companies.

The report and accounts were adopted.



## CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA

### PROFITS AGAIN A RECORD

#### MR. ROBERT ANNAN FORESHADOWS INCREASING REVENUE

The Annual General Meeting of The Consolidated Gold Fields of South Africa, Limited, was held on December 15 in London.

**Mr. Robert Annan**, the chairman, presided and, in the course of his speech, said:—

The Consolidated Gold Fields of South Africa, Ltd. is now the main operating company of the Group, having absorbed New Consolidated Gold Fields Ltd., the subsidiary through which all its operations were carried out for many years. In consequence, we are now able to present one set of accounts covering all the activities of the Group.

The next stage has been to separate the conduct of its business into two main streams, the African and the Non-African.

On the African side, all the administrative and technical services which we provide to the various mining companies are now performed by Gold Fields of South Africa Ltd., a wholly-owned subsidiary reviving the name of the original company started by Cecil Rhodes. It is of South African registration with its Board of Directors in Johannesburg and it has combined the local staffs of New Consolidated Gold Fields, New Union Goldfields and The Anglo-French Exploration Co., Ltd.

We also own the entire share capital of Gold Fields Finance Company (S.A.) Ltd., formerly New Union Goldfields, which gives us a mining finance company of South African registration with a portfolio of mining and industrial investments.

The acquisition of these companies, together with the purchase of a block of our shares by the South African Mutual Finance Corporation (Pty.) Ltd., has brought to us a substantial body of shareholders in the Union. This participation by South African capital in the gold mining industry through our Group is a welcome development.

The activities of the Group are now widespread and we have felt it desirable that our interests in Australia, Canada, the United Kingdom and the United States of America should be held through one company. For this purpose, The Gold Fields American Development Co. Ltd., a wholly-owned subsidiary formed in 1911, has been renamed Gold Fields Mining & Industrial Ltd. Its capital has been increased and it has recently issued £5 million 7% Debenture Stocks for the finance of further expansion. It has transferred to the parent company practically the whole of the South African investments which it previously held and has acquired from it the whole of the business of The H.E. Proprietary Ltd. with its industrial subsidiaries.

#### The Accounts

Dealing now with the accounts and first with the Group Balance Sheet, the issued capital has increased by 3,043,000 Ordinary shares. At June 30 the book cost of the Group's Investments was £23 million. It included this year the investments held by new subsidiary companies and this accounted for most

of the increase of £7 million. The Stock Exchange value of quoted investments at £38.6 million was increased by only £3 million due to the substantial fall in the price of gold mining shares which occurred since December 31, last, when the total stood at over £50 million.

It is most pleasing to be able to report that the profits of the Group are once again a record. For the first time in the history of the Company the profits before tax have exceeded £5 million. This is partly due to the contribution made by the investments held by the three new subsidiary companies, but in the main it reflects the increased dividends on our holdings in the Far West Rand and Orange Free State and the resumption of dividends by the platinum companies. The new industrial and mining interests which we have acquired all had a satisfactory year's trading. Their contribution to Group profits for the year, before providing for tax and their investment depreciation, amounted to £995,000. This does not include pre-acquisition profits of about £200,000.

After making an appropriation to General Reserve and after taking into account unappropriated profits brought forward, there remains available the sum of £3,145,000. Your Directors recommend the payment of a final dividend of 3s. 9d. per Ordinary share less tax, thus maintaining the previous year's total of 5s. 0d. per share on the considerably increased capital. The Preference and Ordinary dividends will require £1½ million, thus leaving approximately the same amount of unappropriated profits, namely £1½ million, to be carried forward to next year.

As you know, your Board also recommend a Capitalization Issue of one new Ordinary share for every ten such shares now held. The profits of the Group during the current year to date have been satisfactory and provided they continue to be so, then in the absence of new or unforeseen factors beyond their control, your Board expect to be able to maintain the present annual rate of dividend, namely 5s. 0d. per share, on the ordinary capital as increased by this issue.

#### Operations in Africa

Coming now to operations in Africa, the gold mining industry has made steady and uninterrupted progress in the past year. The tonnage of ore milled, the working profits and the total of dividends declared have all reached record figures. The supply of labour was ample and industrial relations in the industry maintained their long unbroken record of peace. The recent unrest in certain urban areas has not affected the mining industry at all.

In our own Group the output of gold for the year reached a new record and at 3.6 million fine ounces represents roughly one-tenth of current "free world" production. Indications are that it will show further rises in the years immediately ahead. Our aggregate dividend income from South African gold holdings has shown a further rise. We

hold shares in a number of companies whose mines are planning further expansion of output and whose dividends are expected to grow.

#### Non-African Interests

Gold Fields Mining & Industrial Ltd. has taken over the administration of our group interests outside of Africa. Registered in Great Britain it has local managements in New York, Toronto and Sydney, and a number of operating subsidiaries.

In the United States, Buell Engineering Co., Inc. specializes in the design and manufacture of equipment for the collection of industrial dust either for the recovery of valuable material or for the avoidance of air pollution. It has recently acquired the business of the Northern Blower Company in order to add to its range of equipment and has formed a United Kingdom subsidiary, Ambuco Limited, to develop its business in the sterling area. Its business has suffered from the slackening of new construction in the United States but the volume of orders is now showing some improvement.

In England, Gold Fields Mining & Industrial operates two industrial subsidiaries. Metalion, wholly owned, is a metal finishing business established twenty-six years ago. Its factory in London is working to capacity and its profits are well maintained.

Alumasc, in which we own 89%, operates a process for low-pressure die casting of aluminium, with a factory at Burton Latimer, Northants. Of a variety of products, casks for the brewery and soft drink trade with patented ancillary service equipment are, at present, the most important, but other lines are also being developed. The factory, recently extended, is working at top pressure and profits, in consequence, show a substantial increase.

#### The Future

As to the future, we look to it with confidence. Our investment in the gold mining industry of South Africa is predominantly in the newer mines which have still to reach their peak and in others which have yet to begin production, so that we can expect increasing revenue from dividends in the near future. We are also keeping up our exploration in the search for new mines to replace the old. In saying this I am well aware that South Africa has complicated political, social and economic problems. It is not easy for any government in South Africa to frame and carry out a policy aimed at higher standards of civilization for all its peoples, while preserving security for all. Recent events in other parts of Africa have shown only too clearly that too rapid political advancement of the native peoples can have disastrous results. With the present widely varied levels of education and civilization it is inevitable that the State must, for the time being, differentiate in measures applied to its inhabitants. Against this background we are encouraged to note that there is now in South Africa a new willingness to examine the problems afresh.

The report was adopted and at a subsequent Extraordinary General Meeting proposals for the one in ten scrip issue and the increase in the authorized capital by the creation of 1,000,000 Ordinary shares of £1 each were approved.



## MALAYAN TIN DREDGING and SOUTHERN MALAYAN TIN DREDGING

The annual general meetings of Malayan Tin Dredging Ltd., and Southern Malayan Tin Dredging, Ltd., were held on December 16, in London:—

The following are extracts from the Statements of the Chairman, Mr. F. G. Charlesworth:—

### **MALAYAN TIN DREDGING LTD.**

The working profit for the year ended June 30, 1960, amounted to £1,064,038, an increase of £757,176 on that of the preceding year. The principal factors contributing to this satisfactory result were the production from our new No. 4A Dredge and the progressive relaxation of Export Control during the year. After providing £437,991 for taxation and other charges there remains a balance of £614,406, which, with the balance of £119,219 unappropriated at June 30, 1959, makes available £733,625. A final dividend of 7½d. per share is recommended.

During the year sales of 3,300 tons of tin concentrates were made. At the end of the year the Company held a stock of 420 tons of tin concentrates.

I would warn Members that they should not conclude that because Export Control is not for the time being in force production during the current year will be increased. During the year under review No. 3A and No. 4A Dredges were working in ground which was above the average grade of our Kampong Gajah property. They have now worked their way into ground containing lower values and it is not expected that production during the current year will be as high as that during the year under review.

### **Reserves of Mining Land**

As a result of further boring of the undredged ground and experience in the operation of dredges on the property there has been a small increase in the estimated average dredging depth of the ground. The latest estimate is that, at June 30, 1960, the reserves amounted in round figures to 370 million cubic yards of ground. The estimated life of the property is at least 35 years with three dredges in continuous operation.

It has been our stated intention to equip the Kampong Gajah area with four large dredges. Our plans in this respect have been delayed by the incidence of Export Control, and, having regard to that and the heavy capital cost involved in the installation of a modern deep digging dredge, it will be necessary, before proceeding with our plans, to be assured that, if and when Export Control is again imposed, we shall, in the event of our installing a fourth dredge on this property, obtain an assessment covering its estimated production.

At our Batu Gajah property there remained, at June 30, 1960, an area of 72 acres of undredged ground estimated to contain 4½ million cubic yards of ground.

### **International Tin Agreements**

The current International Tin Agreement expires at the end of June, 1961. At an International Tin Conference held during May and June this year the final draft of a Second International Tin Agreement to run for five years from July 1, 1961, was approved subject to ratification by the Governments of at least six producing countries and the Governments of at least nine consuming countries. There can be little doubt that the Agreement will be ratified and come into force on July 1, 1961.

The new Agreement follows the lines of the current agreement with some changes, the most important of which is the reduction of the Buffer Stock from the equivalent of 25,000 tons of tin metal to 20,000 tons which initially is to consist of 12,500 tons of tin and the equivalent of 7,500 tons in cash. An innovation is that the Buffer Stock Manager is empowered to borrow on the security of the stock held with the result that, if conditions required it, the Buffer Stock could in fact be substantially larger than the Stock of 25,000 tons provided for by the current Agreement.

The reduction in the Buffer Stock under the new Agreement should in any event result in part of the contributions to the present Stock being repaid and it is possible that a substantial part if not the whole of the contributions made to the present Stock by Malayan producers will be repaid. But in this event producers will have subsequently to make contributions so that the new but smaller Buffer Stock could be financed.

It is hoped that West Germany and Japan which are consuming countries may become parties to the new Agreement but the U.S.S.R. and China, which are producing countries, seem likely to remain outside the Agreement. The success of the new Agreement will, as in the past very largely depend on the continued goodwill of the U.S.A. with its very large strategic stock-pile of tin.

### **General**

At the time of preparing this Address supplies of tin and demand for the metal appear to be approximately in balance and the London cash price, which since July 1 has not been affected by operations of the Buffer Stock Manager, is, with small daily fluctuations, in the region of £800 a ton. It is evident that for some months past the level of supplies from Malayan producers has been maintained by current mine outputs aided by disposals from minehead stocks. These stocks are not inexhaustible but supplies from that source may to a large extent be replaced by increases in production resulting from the restarting of dredges and the reopening of mines closed down during the period of Export Control. Doubt has been expressed whether some producing countries will be able to increase their productions. Any increase in demand or even maintenance of demand at the

present level during the next few months might result in a shortage of the metal and, if the price were to rise to £830 a ton, in disposals from the Buffer Stock, which now contains 10,030 tons of tin. These considerations apply to the more immediate future and the position will be governed by the level of world industrial activity, particularly in the U.S.A., which is the largest consumer of tin.

### **SOUTHERN MALAYAN TIN DREDGING LTD.**

The working profit for the year ended June 30, 1960 amounted to £734,835, an increase of £366,692 on that of the preceding year. After providing £302,701 for taxation there remained a balance of £431,353 which, with the balance unappropriated at June 30, 1959, makes available £488,248.

A final dividend of 7½d. per share is recommended.

Sales of 2,735 tons of tin concentrates were made during the year. At the end of the year the Company held a stock of 374 tons of tin concentrates.

As Members will be aware, Export Control ceased to be in force from October 1 last. If the five dredges operating at the end of the year under review can be maintained in continuous operation throughout the current year it is expected that, in the absence of unforeseen developments, production for the current year should be higher than that during the year under review.

Our main mining areas are the adjoining Tanjong Tualang and Teja properties. At the end of the year under review there remained on these properties an undredged area of 1,144 acres estimated to contain 88 million cubic yards of ground which can be worked by the five dredges at present operating on these properties.

In addition, the Government has agreed to grant the Company a Mining Lease over 400 acres of mining land contained in the Kinta River Reserve on completion of deviation of the river. A large part of the deviation has been completed and the river turned into it. The remainder will be completed when the ground into which the river is to be diverted has been dredged. This area of 400 acres is estimated to contain an additional 38 million cubic yards of ground which can also be worked by the five operating dredges.

At June 30, 1960, the estimated life of the undredged ground at these properties was 10½ years with five dredges in continuous full production.

Recent boring of the dredged ground on these properties has disclosed that there is a large area with extensive underlying areas of undredged ground below the dredging depth of the dredges now operating which it may be profitable to rework with a deeper digging large capacity dredge.

At the Company's property known as West Degong Road there is a selected area of 520 acres estimated to contain in round figures 59 million cubic yards of ground which will provide a dredging life of approximately 18½ years for the dredge transferred to that property. If an area of 206 acres containing lower values, which is adjacent to the selected area, is also worked a further life of approximately eight years will be added.

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**Workington Sinter Plant**

The new £2,500,000 single strand continuous sinter plant at Workington Iron and Steel Co. was officially opened by Crown Prince Harald of Norway on December 6, as noted in our issue of December 9. Designed to produce 12,500 tons of self-fluxing sinter per week ultimately, the plant is now in full operation. The code name, Focus, given to the project, stands for "Foreign Ore Concentrates Usage".

Post-war developments in Norway have made available considerable tonnages of iron ore particularly well suited to the Acid Bessemer steelmaking process employed at Workington. The ore is mined in opencast workings by the Sydvaranger Co. at Kirkenes. After processing, the ore is shipped as a powdered concentrate containing 65 per cent of iron. As well as possessing a high iron content, the concentrate is low in phosphorus and other impurities. It is intended to consume between 60 and 70 per cent of these Norwegian concentrates in the raw materials supplied to the new sinter plant, equivalent to an annual intake of 400,000 tons. The balance will be provided from other overseas sources and from the company's own hematite ore mines in Cumberland, which are currently producing about 120,000 tons a year.

In the Workington plant, sinter mixture materials are fed on to a gathering belt by 9 ft. dia. rotary feeder tables fitted with speed adjustment. After primary mixing in a twin paddle rotary drum mixer of 200 tons per hr. capacity, the mix is conveyed onwards to a surge hopper from which it is fed under control to a pelletizing drum.

The Head Wrightson/McKee single strand continuous sintering machine is 6 ft. wide and 180 ft. long, equipped with 28 wind boxes and having an effective grate area of 1,008 sq. ft. Strand speed is variable between 45 and 170 in. per min., the mix being ignited by an automatically regulated mixture of blast furnace and coke oven gases with combustion air.

Discharged sinter passes through a breaker with 6 in. knife spacings to a Schenk vibrating screen. By means of a variable speed feeder, the oversize sinter is fed to a Lurgi-Frodingham circular cooler with a designed capacity of 100 tons per hr., the temperature of the sinter being reduced from 850 deg. C. to 100 deg. C. during its passage through the cooler. Pallets in the cooler discharge the sinter into a hopper for transfer via a variable speed feeder and a conveyor to a further screen at which the sinter may be separated into two size ranges before delivery by transfer car to the furnace bunkers.

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## PAHANG CONSOLIDATED

The 54th annual general meeting of The Pahang Consolidated Company Ltd., was held on December 15 in London, Mr. J. N. Davies, chairman and managing director, presiding.

The following is an extract from his circulated statement for the year July 31, 1960:

Your Board has pleasure in announcing a satisfactory year's results. Reduction in the burden of restriction on output was progressive and in the last quarter of 1960 all export control has been removed. These developments permitted a return to full production in November, 1959, and the benefit of this is reflected in the published results.

During the year 166,000 tons of ore was mined and treated to produce 2,252 tons of Mill Tin Oxide. No Alluvial Tin was obtained from tributaries, but it is hoped that a resumption of this production may be possible during the course of the current year.

After providing for taxation and depreciation there is a net profit for the year of £167,043. A final dividend of 15 per cent on the Ordinary Stock is recommended, making 18 per cent for the year.

Consumption of the metal continues to rise, while some producing countries appear to have had difficulty in keeping up with increased quotas. Provided the level of world industrial production is maintained, it seems inevitable that higher metal prices are to be expected although at present the International Tin Agreement provides a limiting factor.

The report was adopted.

## LAMPA MINING

### MR. G. L. CARROLL REVIEWS PROGRESS AND OUTLOOK

The Fifty-fourth Annual General Meeting of The Lampa Mining Company Limited was held on December 19 at Liverpool, Mr. G. L. Carroll, the chairman, presiding. The following are extracts from his report:—

We have enjoyed a distinctly prosperous year. The throughput of our furnaces has increased and, in particular, the weight of copper produced has risen. On the other hand, we have enjoyed a higher copper price. The silver price has held remarkably steady and we enjoyed the benefits of a very favourable exchange rate.

We have been able to declare a final dividend and bonus, making a total for the year of 30 per cent, on our issued capital, which now stands at £140,000, therefore distributing a bigger dividend than we have ever previously done in the history of the Company.

The board are proposing that the balance of the authorized capital—namely, £60,000 should be issued to shareholders by way of a bonus issue.

Future prospects.—The most important thing to note is the considerable fall which has taken place in the copper market and the possibility that this fall has not come to an end. Our production costs have risen considerably in recent months. Our profit margins are, therefore being squeezed at both ends by a reduction in the amount we realize for our product and an increase in the cost of its production. I feel that it is my duty to sound a note of caution. It would appear to be too optimistic to

hope that this year's results can be as favourable as those now placed before you. We are working steadily at a reasonable profit and looking forward to further increases in production.

The report was adopted and the bonus issue approved.

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Ferric Oxide	Fe <sub>2</sub> O <sub>3</sub>	1.13%	
Alumina	Al <sub>2</sub> O <sub>3</sub>	0.98%	(P 0.131%)
Lime	CaO	3.36%	
Magnesia	MgO	Trace	(S 0.056%)
Phosphorus Pentoxide	P <sub>2</sub> O <sub>5</sub>	0.30%	
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Loss on ignition, i.e. Combined Water, CO <sub>2</sub> , Organic Matter, etc.		4.38%	
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Arsenic, £400 per ton	Osmium, £18/£22 oz. nom.
Bismuth (min. 1 ton lots) 16s. lb. nom.	Osmiridium, nom.
Cadmium 11c. 0d. lb.	Palladium, Imported, £8 12s. 6d.
Cerium (99%) net, £15 0s. lb. delivered U.K.	Platinum U.K. and Empire Refined £30 5s.
Chromium, Cr. 99% 6s. 11d./7s. 4d. lb.	Imported £284/£284
Cobalt, 12s. lb.	Quicksilver, £694 ex-warehouse
Germanium, 99.99%, Ge. kilo lots 2s. 5d. per gram	Rhodium, £43/£45 oz.
Gold, 253s. 0d.	Ruthenium, £14/£16 oz. nom.
Iridium, £20/£23 oz. nom.	Selenium, 46s. 6d. per lb.
Lanthanum (98%/99%) 15s. per gram.	Silver, 79½d. f. oz. spot and 79½d. f.d.
	Tellurium, 28s. 6d. lb.

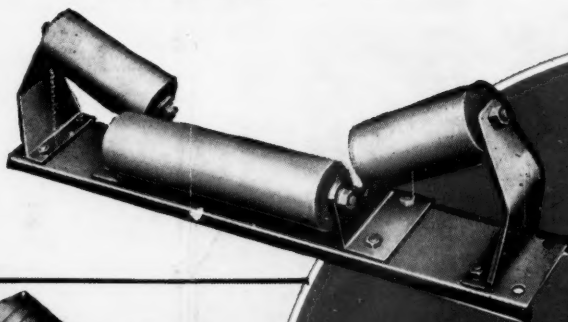
### ORES AND OXIDES

Antimony Ore (60%) basis .. .. .	21s. 6d./22s. 0d. per unit c.i.f.
Beryl (min. 10 per cent BeO) .. .. .	240s./245s. per l. ton unit BeO
Bismuth .. .. .	30% 5s. 0d. lb. c.i.f.
	20% 3s. 3d. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (semifriable 48%) (Ratio 3 : 1) .. .. .	£15 5s. 0d. per ton c.i.f.
" Hard Lumpy 45% .. .. . (Ratio 3 : 1) .. .. .	£15 10s. 0d. per ton c.i.f.
" Refractory 40% .. .. .	£11 0s. 0d. per ton c.i.f.
" Smalls 44% .. .. . (Ratio 3 : 1) .. .. .	£13 5s. 0d. per ton c.i.f.
Baluchistan 48% .. .. . (Ratio 3 : 1) .. .. .	£11 15s. 0d. per ton f.o.b.
Columbite, Nigerian quality, basis 70% combined pentoxides (Ratio 10 : 1) .. .. .	Nb <sub>2</sub> O <sub>5</sub> : Ta <sub>2</sub> O <sub>5</sub> 170s./172s. 6d. per l. ton unit c.i.f.
Fluorspar—	
Acid Grade, Flotated Material .. .. .	£22 13s. 3d. per ton ex. works
Metallurgical (75/80% CaF <sub>2</sub> ) .. .. .	156s. 0d. ex. works
Lithium Ore—	
Petalite min. 34% Li <sub>2</sub> O .. .. .	50s. 0d./55s. 0d. per unit f.o.b. Beira
Lepidolite min. 34% Li <sub>2</sub> O .. .. .	50s. 0d./55s. 0d. per unit f.o.b. Beira
Amblygonite basis 7% Li <sub>2</sub> O .. .. .	75s./85s. per ton f.o.b. Beira
Magnesite, ground calcined .. .. .	£28 0s./£30 0s. d/d
Magnesite Raw (ground) .. .. .	£21 0s./£23 0s. d/d
Manganese Ore Indian—	
Europe (46% 48%) basis 60s. 0d. freight .. .. .	73d./75d. c.i.f. nom.
Manganese Ore (43% 45%) .. .. .	69d./71d. c.i.f. nom.
Manganese Ore (38% 40%) .. .. .	nom.
Molybdenite (85%) basis .. .. .	8s. 11d. per lb. f.o.b.)
Titanium Ore—	
Rutile 95/97% TiO <sub>2</sub> (prompt delivery) .. .. .	£28 0s. 0d. per ton c.i.f. Aust'n
Ilmenite 50/52% TiO <sub>2</sub> .. .. .	£11 10s. per ton c.i.f. Malayan
Wolfram and Scheelite (65%) .. .. .	148s. 0d./153s. 0d. per unit c.i.f.
Vanadium—	
Fused oxide 95% V <sub>2</sub> O <sub>5</sub> .. .. .	7s. 6d./8s. per lb. V <sub>2</sub> O <sub>5</sub> c.i.f.
Zircon Sand (Australian) 65-66% ZrO <sub>2</sub> .. .. .	£16/£16 10s. ton c.i.f.

## BRITAIN'S **BUSIEST** IDLERS

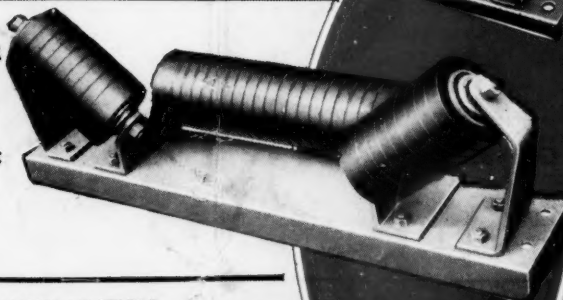
### 3 PULLEY FULLY TROUGHED IDLER

Used throughout the standard run of the conveyor. The trough of the idler is deepened at the loading point to provide a high degree of automatic centralisation of the load.



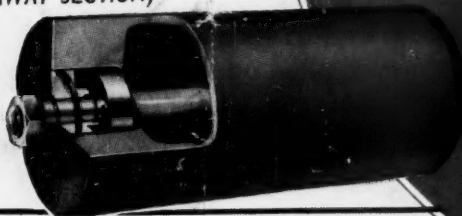
### 3 PULLEY IMPACT IDLER

Used at every loading point to absorb the impact from heavy and sharp material, thus preventing damage to the belt. The cushioning effect is obtained by a series of rubber rings clamped endwise to present an unbroken surface to the belt.



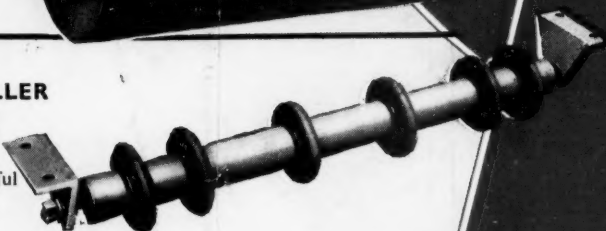
### CAST IRON ROLLER (CUTAWAY SECTION)

This cut away section shows the unique piston ring seal which provides complete protection for the bearings. This idler is specifically designed for handling materials where abrasion must be resisted.



### DISC TYPE RETURN ROLLER

Presents a limited area to the belt, thus preventing deposit build up. These rollers are especially successful when sticky materials are handled



Sutcliffe Idlers ensure almost frictionless conveying with minimum maintenance.

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RICHARD SUTCLIFFE LTD. HORBURY WAKEFIELD



dm RS. 86.

